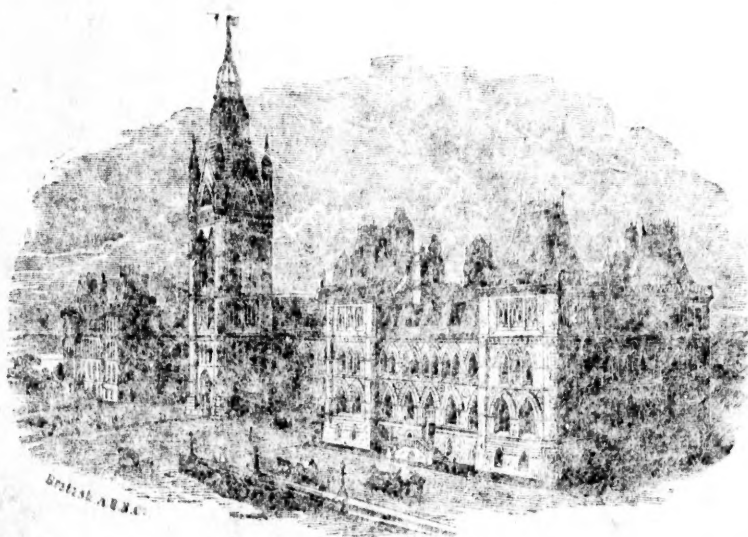


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TO CANADA, AND THROUGH IT,

WITH THE BRITISH ASSOCIATION.



PARLIAMENT HOUSE, OTTAWA.

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(REVISED EDITION.)



Ottawa:
DEPARTMENT OF AGRICULTURE.

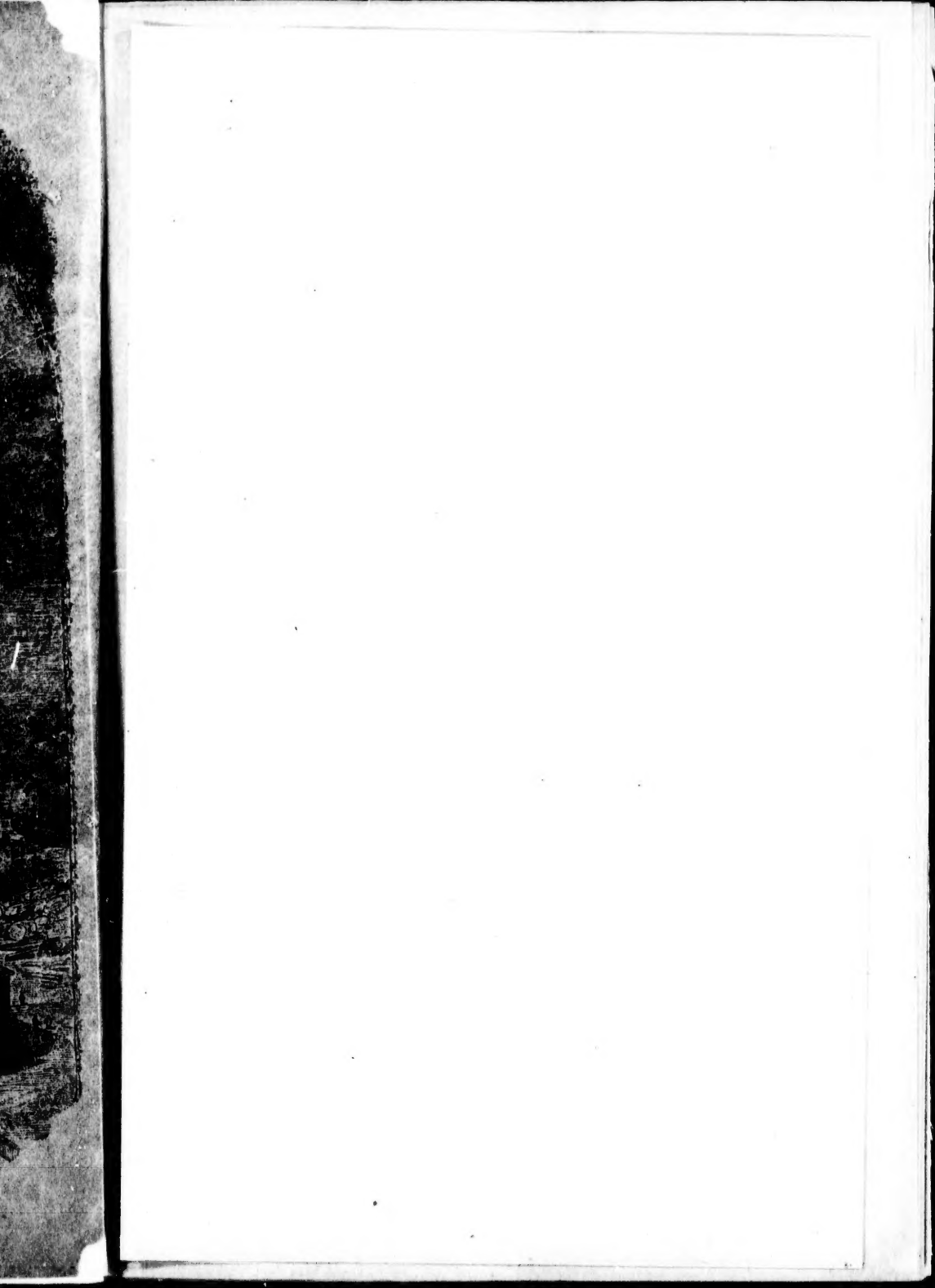
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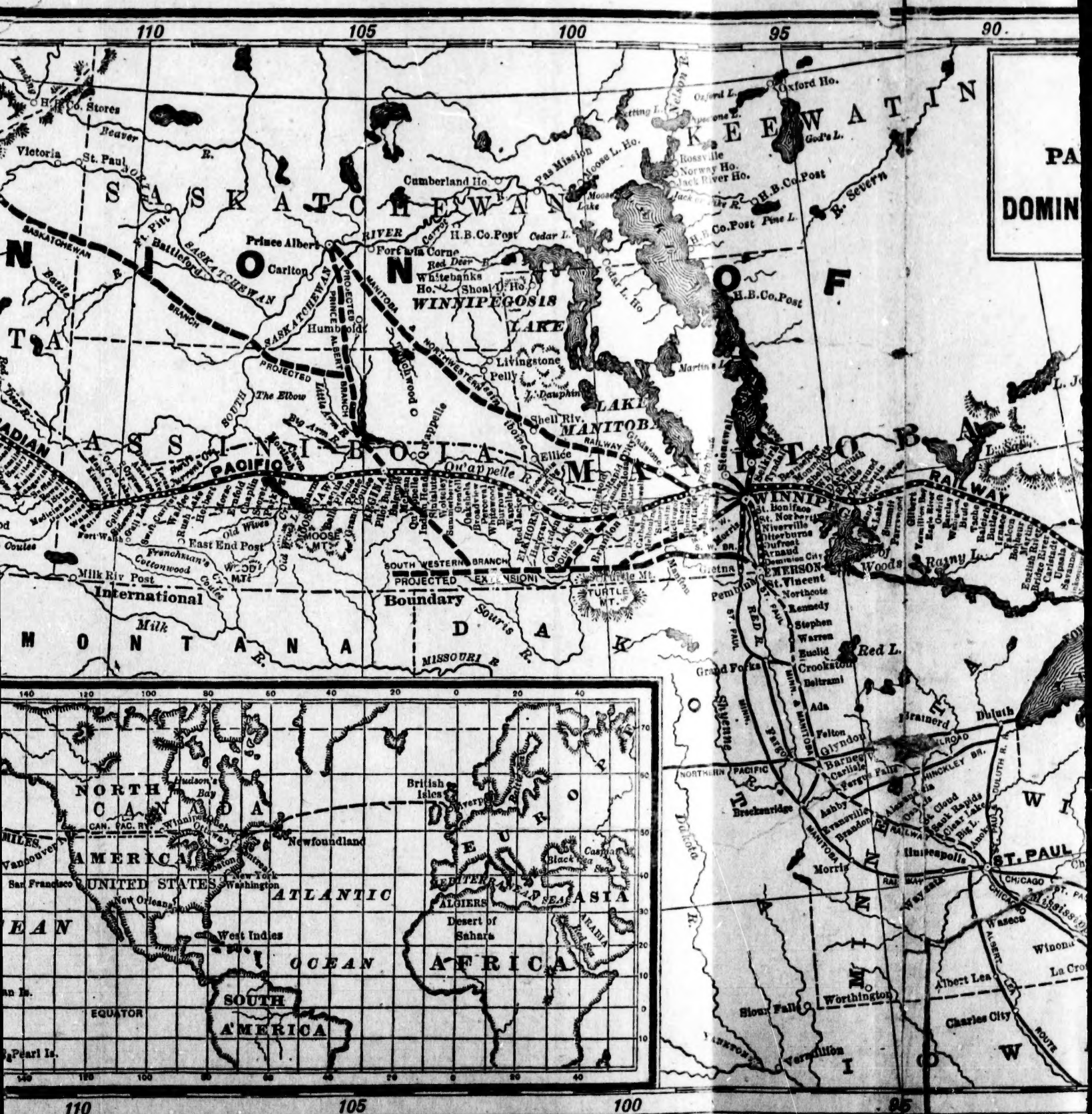
VIEW FROM THE CITADEL,
QUEBEC, LOOKING DOWN THE
ST. LAWRENCE.

From a Sketch by H. R. H.
the Princess Louise.

A VIEW AT QUEBEC







This is a detailed historical map of the Great Lakes region, titled "MAP OF PART OF THE DOMINION OF CANADA." The map shows the five Great Lakes (Superior, Michigan, Huron, Erie, and Ontario) and the surrounding land areas of Canada, the United States, and parts of Europe. Major cities like Toronto, Montreal, and St. Paul are marked. The map includes a grid of latitude and longitude lines and a scale bar at the bottom.



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To CANADA, AND THROUGH IT, WITH THE BRITISH ASSOCIATION.

It was a half hour of emotion and excitement for a number of passengers whose friends looked on from the shore, when the *Parisian*, "smart as a new pin," cautiously and slowly, now churning the dark water into white foam, then swinging her mighty stern just clear of some huge granite wall, threaded her way through the maze of docks and shipping on the afternoon of the famous sixteenth of August, 1884, as she left the wharf for the ocean with a number of the members of the British Association on board. How, in the name of all that's wonderful, a ship of such magnificent proportions can be got round such corners, and through the docks and locks, without a scratch on her long black sides, is a mystery known only to the craft! It was done—we saw it—and that was all a good many of us knew about it at the time. But later on we saw the ease and celerity with which she was guided among the billows, and our wonder was lost in familiarity. To some of us landsmen the whole scene in the Alexandra Docks, Liverpool, seemed one of orderly disorder, controlled, as we soon perceived, by the subdued excitement, the almost philosophic calmness, which pervades the minds of men whose calling lies in the great emporiums of the commerce of Old England.

The Allan Steamship Company, with marked consideration, and at no small loss and inconvenience, had taken the *Parisian* out of her place in the mail service to Canada, and placed her as a special ship at the service of the "busy members of the Association," as I heard these last ones termed, whom she carried from the Mersey to the St. Lawrence without a stop or hitch of any sort, in nice time to settle down quietly for a day in Montreal before the session opened. She was just as "spick and span" on that day as she was when the builders turned her over to the owners in March, 1881, and when she left the Clyde for the Mersey to begin her duties as one of Her Majesty's mail boats between England and Canada. She seemed none the worse for the buffeting she had gone through among three years' storms and billows of the great ocean I have named. Smart she ought to be, of course, built of steel throughout, and having all the latest improvements, and smart she is and will be under officers and engineers who take so worthy a pride in so noble a ship.

The voyage out to Quebec was a quick and successful, and, on the whole, a pleasant one. The ship behaved handsomely in the one or two days' stormy weather we had as we approached the bleak coasts of Labrador and Newfoundland. To say she rode the billows gracefully like a swan would be to employ no mere euphemism, for the motion, though considerable at times, was well balanced and easy. The way she pushed her shoulders, so to speak, into the mighty waves which swirled around her, splitting them into foam, and hurling them apart on either side, was an unfailing source of interest and admiration to those who had found their sea legs and whose commissariat departments were not in a state of disorder; and though a spiteful wave once in a while swept over her, as if consciously bent on mischief, the water passed off again as it does from the back of a duck. The fiend of seasickness haunted some of us, of course, but not very seriously, and in a couple of days' time there were few who did not take part in the amusements that were soon in full swing. The President of the Association, Lord Rayleigh, joined in the "tug of war," and the ladies discoursed sweet music. A few icebergs, one of which was very large, according to measurements determined by the scientists on board, and now and then a sail in sight, provided a fund of interest which was eagerly embraced, and the finny as well as the feathery folk of the vasty deep came in for a due share of attention when they hove in sight. Evening entertainments and amusements beguiled the tedium of those who did not care to read or write, and lotteries on the ship's run afforded diurnal and harmless relaxation. One of the most pleasing incidents of the voyage was the presentation to Capt. Wylie, who is a general favorite, and bears the reputation of being one of the safest captains

on the Atlantic or anywhere else, of a purse of gold, for the purchase of a massive watch chain. This was given as a tribute of esteem from members of the Association, and as a memento of a now historical trip across the Atlantic.

The *Parisian* carried a remarkable freight in passengers, perhaps the most remarkable from a scientific point of view, that ever crossed the Atlantic in any one ship. She will be hereafter known historically as the vessel to whom a large number of the members of the British Association confided their fortunes on the first occasion when the Association met outside the Islands of Great Britain, yet within the bounds of that Greater Britain whose magnificent distances are being yearly lessened and cheapened to the traveller. There were on board, also, a large number of emigrants, whose destination for the most part was the Great North-West of Canada. Among them were a number of children, mostly under fifteen years old, who had been rescued from the slums and gutters of London and elsewhere, clothed in neat garments, educated to some extent, and were being sent out to the Homes for Children of which Miss Rye and other philanthropic ladies have taken charge in Canada, and from which they will be distributed among the hospitable homes of the Dominion, some as domestics, others as adopted children. All these people, young and old, had comfortable quarters in the ship, and an unstinted supply of wholesome food. I went about freely among them according to my wont, chatting about the voyage and the country they were going to; and not a single word of complaint did I hear about the accommodation on board, or of depression in reference to their prospects in the new country.

The Straits of Belle Isle were passed after night-fall, so that our first view of Canadian territory was taken under the shadowy light of the moon and stars, and we could barely discern, if indeed we could discern at all, the few great icebergs that were aground on the northern coast of Newfoundland. Our first stop was at Rimouski, in the mouth of the mighty St. Lawrence, where we landed Sir Leonard Tilley, the Finance Minister of the Dominion of Canada, and the members of his family; after which we had ample opportunity of admiring the well-wooded and otherwise beautiful banks of the river, and the islands we passed on the way. Many attractive farms and residences came into view on both sides, as the river narrowed toward Quebec, and the green of the grass and the yellow of the grain were welcome to our eyes after so much of the restless blue of the ocean. Early Monday morning, the 25th of August, found us roaming about the steep streets of the quaint city of Quebec, whose citadel presents a noble spectacle as we approach it up the river, and some of the party drove down to diminish the somewhat distant view we had previously obtained from the ship of the beautiful falls of Montmorenci. We had been boarded at Rimouski by two reporters of an enterprising paper, and, on our arrival at Montreal in the evening, we read with some amusement the result of the various "interviews" which took place on board the *Parisian*.



CITY OF MONTREAL, FROM THE HARBOUR.

The city of Montreal, whose site is unsurpassed in America, was *en fete* during the session of the British Association, and splendid weather contributed not a little to the success of the meeting. The different sections were located in suitable buildings, mostly in the rooms of the handsome McGill College; and the Queen's Hall, a commodious and handsome room, was employed for the opening ceremony, the President's address, and for various evening lectures. Many of the members of the Association were hospitably entertained in private houses, and our Canadian friends did their

almost to evince their appreciation of the compliment which the Association had paid them in holding its 1884 session in this noble dependency of the British Crown. Aforetime no session had been held outside the limits of the British Islands. But the success of this one has been so conspicuous, that we may look forward to visits to other distant portions of the Empire, to India, Australia and New Zealand, and to Canada revisited. This first excursion to a distant land will be famous in the annals of the Association, and it cannot fail to be of great benefit to Canada and to the Empire of which she forms so large a part. Canada will henceforth be known, as she has not aforetime had a chance of being known, to the scientific world of Great Britain; and it is competent for me to say that this knowledge will result in greater respect and admiration of the New Country being entertained by the scientific visitors. This is as it should be, that the bonds of Union should be strengthened and tightened, and it can hardly otherwise happen than that a great stimulus will have been given to the noble idea of closer political confederation between the different countries which are pearls in the necklace of Great Britain, and diamonds in her crown!

It is outside the limits of this report, as it is also beyond my capacity, to give a sketch of the papers and discussions of the Montreal meeting of the British Association. My object is to discuss the merits of Canada as a place to which the overflow of British population may well be directed; and as my examination will be mainly from an agricultural standpoint, it will be not inappropriate if I give herewith the substance of the paper I had the privilege of reading in Section F. of the Association:

BRITISH AND CANADIAN AGRICULTURE.

"A competition that is interesting and important in a high degree is going on between the farmers of the 'Old Country' and those of the 'New'; and it naturally involves fiscal problems which affect already, and in the future will much more affect, the condition of agriculture in both countries. Of the modern and more striking features of this rivalry our fathers had no conception whatever, nor had we a decade and a half ago; but with the older ones we had been familiar for some time before, though even now we do not apprehend the full scope of the influence which they will exert in the future. That the competition will become keener on the part of the new country, as well as greater in volume, is clearly enough seen; but we cannot foretell the lines on which it will be developed, or the surprises that may be in store. In this age of steam and electricity, and of multifarious inventions, new and unlooked-for factors are being brought into play, and these involve the adoption of various modifications in farming practices. The twin principles of progress and adaptation are at work to-day in agriculture as they have not aforetime been, and nothing, even in agriculture, is so inevitable as the unforeseen. Of this, a striking instance is seen in the transatlantic trade in fresh meat, so recently developed, and not less so in that of live animals.

"I will endeavour to trace out briefly some of the tendencies which are in play just now, and to indicate the lines which will probably have to be followed in the future. In this I do not pretend to more than approximate and suggest, which, indeed, is about all that any one would venture to do.

"Confining for the present my remarks to Canada, I will give statistics relating to exports of dairy products:

Fiscal years ended June 30.	BUTTER.		CHEESE.	
	Quantity.	Value.	Quantity.	Value.
1873....	15,208,633 lbs.	\$2,808,979	16,483,211 lbs.	\$2,280,412
1883....	8,106,447 "	1,705,817	58,041,387 "	6,451,870

"These figures show a large falling off in butter, but a much larger proportionate increase in cheese, which may be in part accounted for in the superior advantages which cheese affords for transit purposes, as well as in—as butter is now made and packed in Canada—its better keeping properties. Canada, indeed, has in recent years proved herself capable of producing cheese of very superior quality and condition, her climate being, so far as the great American continent goes, exceptionally well adapted to the pursuit of dairy husbandry. But the disparity I have indicated as between cheese and butter, as regards transit and preservation, is one which has no need to exist, for butter can be so made and packed as to travel safely and in good condition to the other side of the world, and back again, if need be. At the Centennial Fair of New Brunswick last year I exhibited butter in hermetically sealed cans, which was over six months old and still quite fresh, though but slightly salted. This butter was made in Denmark for the West Indian trade, and was brought by me from England. Canada may produce such butter, and may win a large portion of this self-same trade to herself, and if she fails in this, the fault will be entirely her own.

"The value of Canadian exports, consisting of animals and their produce, for the year ending June 30, 1883, was \$20,284,343; and of other agricultural products, \$22,318,519. The great bulk of these products was sent to England, and the demand in that country is developing in Canada the

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tendency to largely increase the export in animals and their produce. Canada, indeed, will owe much of her future agricultural prosperity to the export of beef and mutton and of dairy products.

"The Eastern and Maritime Provinces of Canada are in the incipient stages of agricultural transition, and will in time develop into stock-raising and dairying countries, though the process may be long in operation. But there can hardly be a doubt that the tendency is a wise one; first, because they are better adapted to these pursuits than to grain-raising; and, second, because the North-West Territory is destined to become, at no distant day, the chief granary of Canada, as also to a great extent of England, and probably too of the United States. It has for some years been patent that British farmers cannot depend on wheat as a paying crop, save once in a while and to a very small degree; and even this pittance of profit threatens to vanish very soon. These remarks do almost equally apply to Eastern Canada, as may be illustrated by figures relating to exports of that cereal, for the quantity of wheat imported into England from British North America in 1880 was 3,393,544 cwts.; and in 1881, 2,860,854 cwts.; while the total export from Canada in the year ending June 30, 1884, to all countries whither it was sent, was 5,867,453 bushels, or about 3,250,000 cwts. From these returns it would appear that Canada has not in recent years been maintaining the volume of her wheat exports, though it is probable that the opening up of the North-West by the Canadian Pacific Railway will shortly enable her to greatly increase them, if she thinks well to do so.

"So far, however, as the production of wheat is concerned in British foreign possessions, a new competitor and a most powerful and therefore dangerous one, has recently entered the lists, and Canada may ere long find herself seriously handicapped by India. The exports of wheat from India to England show a very rapid increase in volume, and these exports have risen thus quickly without causing 'any appreciable rise in the price of wheat in the country.' It is probable, indeed, that the price of wheat will this year touch a lower relative point than it ever did before; and it must be admitted that the climate and soil of India are eminently suitable to the growth of wheat of fair quality. The probability now is that, with the extension of the railway system of our Eastern Empire, we may expect, as a direct and rapid result of the competition of that vast country, where cheap labour abounds, and the cost of living, clothing and housing is very low, a still further shrinkage in the price of breadstuffs.

"The question is one of supreme and surpassing importance to the great bulk of the inhabitants of this country; for agriculture has been, is, and must remain, the chief glory of Canada. I may, therefore draw the attention of Canadian farmers, especially in the Eastern Provinces, to the urgent expediency of extending their operations in stock-raising and dairy-farming. They will do well to follow the best practices of the Old Country in having crop-rotations made subsidiary to stock-raising, stock-fattening, and the production of milk. And in order to this, the careful breeding, feeding, and improvement of live stock, the conservation of manure, a thorough tilling of the soil, and the employment of suitable purchased fertilizers and feeding stuffs, will occupy much more than they have hitherto done, prominent positions in the farmer's programme.

"It is competent for me to record, as a result of personal investigation, my opinion that the Eastern and Maritime Provinces, in many parts of them, are well adapted in soil and climate to the growth of roots and green crops, as well as of hay and straw for forage. These crops supply the foundation for successful stock-raising and dairying, and by stock-raising I do not mean cattle only, but all sorts of animals which go to the efficient equipment of mixed farms.

"In the Maritime Provinces, particularly, a change in the habits of the farming community is pending, and must quickly come, for wooden shipbuilding is dying out, and lumbering will decline in volume. These provinces indeed enjoy great advantages in respect of seaboard, and of a climate suitable to the kind of husbandry I have indicated. Where, indeed, on the vast continent of America shall we find better stock land than in the noble valley of the St. John River, in the Sackville marshes, in the vale of Annapolis, in the Eastern Townships of Quebec, and in many other localities; while, as for sheep husbandry, where have we a soil so suitable as the dry and friable loam of Prince Edward Island?

"Meanwhile what is the position of farmers in Britain? and what their prospects in the future? In the ten years ending June 30, 1883, the area of permanent grass land in England alone has increased from 10,237,814 to 12,008,679 acres, which is more than one-third of her cultivable area, and the tendency to lay down arable land to grass is still in force, for the heavy soils of the country no longer pay for cultivation. As a corollary of this tendency, we ought to look for an increase in the number of live stock, providing it does not go too far; and failing this increase, national agricultural decadence stares us in the face in Old England. Fortunately, the increase is going on for the present, the figures being as follow:

	Cattle.	Sheep.	Pigs.
1882.....	4,081,735	14,947,004	2,122,625
1883.....	4,216,626	15,594,660	2,231,195

"For the United Kingdom they stand as follow :

	Cattle.	Sheep.	Pigs.
1882.....	9,832,417	27,446,220	3,956,495
1883.....	10,097,943	28,347,460	3,986,428

"In Horses there is a decrease in the United Kingdom from 1,905,317 to 1,893,745, and the increase of other animals of the farm is less than it ought to be, the numbers being still below those of ten years ago.

"But even though the laying down of land to grass were accompanied by a commensurate increase of live stock, the tendency that way is to be regretted; first, because land under arable cultivation, in any case light and sound land, may be made to produce more food for stock and man, than land in grass; and, second, because the rural population must diminish correspondingly with the increase of permanent grass land, on account of the scarcity of employment.

"The present position of the agricultural labourer, at all events in the Midland and Northern counties, and so far, in any case, as living and working go, will compare not altogether unfavourably with that of the labourer in Canada—with this all important difference: the Canadian may rise to better things, but the other one must, as a rule, remain a labourer until he drops into the bosom of the earth he has tilled so long. In this there is poetry, no doubt, but poetry is often sad. However, the English labourer of to-day, is better fed, and clothed, and housed, and taught, than his fathers were, and his wages have so increased that he can raise his family better, and lay by a little store against a rainy day, providing he is not a slave to the demon of drink.

"It is painfully evident that seven wet years have left British farmers poor, which means that they are badly equipped to meet the competition which swirls around them everywhere to-day: and seven good years, better than we have any reason to expect, are required to restore to them the measure of prosperity which they enjoyed ten years ago. The wonder is that their condition is not far worse than we find it to be, for they have suffered, not from wet seasons only, but from shorter yields, and from the diminished values which were the result of sharp foreign competition. The seasons, however, are again improving, and the present year promises to be the best of any since 1876.

"But the rent-paying farmers of Britain to-day, so far as law is concerned are placed in a position much more favourable than that of their fathers, for the money which they bury in the soil, in the way of adding to its fertility, cannot now be confiscated, as it formerly could, by rapacious landlords. The position of the progressive farmer is now tolerably safe, and in this he has the encouragement without which husbandry cannot flourish as it ought in a country where the landlord system prevails, and in the face of the competition of the globe. To place the matter in a nutshell: British farmers must now be compensated for improvements which they leave behind them when they quit their farms.

"The Canadian farmer owns the land he farms, and can do with it what he likes. All very well, this, when ownership does not bury too large a capital; but in the course of time, as land increases in value, a landlord and tenant system will grow up in Canada, and it will be well that it should at the outset be defined on equitable lines. The British farmer avoids the loss which comes of a fall in the value of land—a loss from which every agricultural landowner in Britain is suffering to-day, more or less—and his capital is all available for active operations. So long as the industry of farmers is duly shielded from injustice, it is a loss rather than a gain to them to be landowners, for landowning at 2½ per cent is a luxury in which bread-winners can hardly afford to indulge.

"Meanwhile, the prospects of British farmers are brightening, and a few good seasons will revive their confidence and replenish their pockets, while a rapidly growing population will maintain the demand for food, no matter what the volume of foreign competition may become. Various means are being taken to inculcate improved practices in husbandry, and sound agricultural knowledge is being imparted to the people. It is in dairy farming, probably, that the greatest need exists for improvement, specially in butter and cheese-making, for the need of tuition in these departments seems so far to be perennial. Dairy schools and other means of dairy tuition have already effected great improvement in Ireland, and similar means are being adopted in England and Scotland. Canada, too, may wisely employ similar agencies, for her destiny is to develop into a great butter and cheese, as well as a beef and mutton and live stock exporting country. She ought indeed to supply England with no inconsiderable quantity of store cattle for fattening there; and she may do this so long as, by preserving a clean bill of health, and by excluding American stock from transit through her territory, she remains out of the list of countries which England has been compelled to schedule on account of diseases. This present immunity from disease among stock is an immense advantage to the farmers of Canada, and it is to be hoped they will not lose it.

"The needs of the day in England, in order that agriculture may flourish, are improved practices and greater economy, and the adoption of newer and more efficient ideas, along with more of

personal supervision on the part of the farmer and his family. The rest will follow, as surely as daylight follows darkness.

"The British farmer of the future, released from the bonds which have hampered agriculture too long—the bonds of restricted cropping, of problematical compensation for unexhausted improvements, and of game preservation—blessed, too, with fair play and no favours, and with seasons tolerably favourable, will, I believe, be able to hold his own against the competition of every other country. Already the rivalry of this great continent of America is slackening, so far as the export of wheat is concerned, and will still further slacken as population grows thicker on the ground, and we, in England, also with a rapidly-increasing population, shall be thankful in time to get food from whatever source is open to us."

The views set forth in this paper were fortunate in winning the approval of leading authorities in Canada, and I have therefore reproduced them at some length in a report which is chiefly concerned with Canadian interests.

The session being ended in Montreal, the members instantly began to scatter themselves over the vast continent of North America. The Canadian Pacific Railway Company offered a trip from Montreal to the Rocky Mountains and back, to 150 members, and about 100 availed themselves of this excellent opportunity of seeing the Great North-West. The entire number would have gone but for the croakings of a man who was conspicuous in Montreal, and who had recently been to the Rockies—croakings as to food and accommodation—croakings which we afterwards found to rest on a very slight foundation, if indeed on any foundation at all. It must be understood that travelers in the North-West will not get the accommodation of Pall Mall, and they ought to know better than expect it. The accommodation, however, is good enough under the circumstances, and it is a poor return for the courtesies of a great railway company to exaggerate the crude accommodation which is unavoidable in a new country, and which is better than it seems.

Taking advantage of two days' interval before the trip left for the North-West, my colleague, Professor Kearn, and I ran ahead into Ontario in order to pay a short visit to Professors Mills and Brown, the former the President and the latter the Professor of Agriculture of the Agricultural College at Guelph, afterwards joining the North-West party in Toronto on the morning of the 6th of September. The route of the Canadian Pacific Railway from Montreal to Ottawa lies through a country which contains some good farming land, a heavily timbered country, with plenty of water unequally distributed. We saw many fields of oats and wheat, short and light in straw, but apparently well headed with grain. The proportion of grain to straw is much greater, generally speaking, in Canada than in England, and Canadian crops, which look very small to an English farmer's eye, commonly yield much more grain than he would have thought. From Ottawa to Toronto the route is through a "hard country," which possesses a smaller proportion of good farming land, and which is only just beginning to yield to the toil of the settler. The soil appears to be a friable loam in most places, and responsive to culture; it is, however, encumbered a good deal with boulders and stones of various shapes and sizes, and these are a hindrance to cultivation. The better plan by far, and the cheaper in the end, would be to have these stones built into fences of a permanent character, instead of the wooden snake-fences which are so common in this part of the country. This course has been followed in places here and there, much to the advantage of cultivation and of reaping, as well as of grazing, where the land is in grass. Cattle of an inferior character are seen along the route, and horses showing better breeding; the sheep, too, are better than the cattle, though they too are open to great improvement. Forest trees grow with great facility, but are repeatedly destroyed by forest fires, which, it appears, cannot be prevented at present. The bare poles of the dead trees present a wee-begone and melancholy spectacle, and it seems a great pity that measures are not adopted to prevent the wholesale destruction of trees which, in time to come, would prove a source of wealth to the people. I consider, too, that the cultivation of fruit might be followed with profit by the farmers in many portions of the country traversed by the Canadian Pacific Railway, where the soil is rich enough and the place is sheltered. The hardier sorts of apples and plums would, in any case, be a source of gain to the farmers, once the trees were big enough.

The Agricultural College at Guelph, in Ontario, is one of the most successful institutions of the kind I have yet met with. It is under able superintendence in the various departments, and is doing good work in Canada. I found a very marked improvement pervading it, in many respects, since the time of my previous visit, in 1880. The lawn in front is laid out in a most tasteful and effective and even striking manner, in flower borders, shrubberies, walks and drives. The main building is substantial, commodious, and convenient, and the horticultural department is at once extensive, attractive, and in excellent condition. In the arboretum there are over 400 varieties of shrubs and trees; many of them, being flora of the States, are not expected to be permanent, but are nevertheless employed for educational and experimental purposes. Possibly more of them may survive than is at present expected. Large orchards of apples and grapes have also been planted and promise to do very well. There are seventy-five varieties of grapes, one hundred and thirty of apples, sixty of pears, thirty of plums, and forty of small fruits. The experimental field for the growth of various crops,

the testing of seed, etc., divided off into 180 plots of one-tenth of an acre each. The permanence and vigour of various grasses and clovers, and the cropping capacity of other kinds of seeds, are tested in this field, and the educational value of these experiments is obviously great. The efficacy of certain manures is also tested on plots which are set aside for the purpose, and the whole series of experiments is conducted with a view to deciding certain points which, to the ordinary farmer, are misleading in their undetermined condition, and which are obviously beyond the scope of farmers to decide for themselves. The rain-fall is ascertained in a rain-gauge one-thousandth of an acre in area, a well constructed gauge that will give reliable results, and the rain-water is analysed in the convenient laboratory which stands in the middle of the experimental field. The capacity of different soils for absorbing and retaining water is carefully and continuously tested, in boxes containing the different earths, and from the bottoms of these run pipes which convey the surplus rain into a series of glass jars that are situated in the cellar underneath the rain-gauge. During a shower of rain the clay soil, as was to be expected, gives off rain earlier than the lighter soils; because holding a greater volume of wet in suspension all the time, its capacity for absorbing more is smaller, and it sooner responds to a downpour of rain.

The College, which is a handsome stone structure, stands on an eminence, about one mile away from the flourishing town of Guelph, and commands an extensive and handsome view of the farm and the surrounding country. The students' private rooms are lofty, spacious, and well ventilated. The lecture rooms, too, are well adapted to the purpose; and there is a capital library and an interesting museum, both of which are entertaining to visitors and useful to the institution. The farm buildings are mostly old ones, and though in good repair, are not well adapted to the requirements of the institution. They are too near the College on the eastern side of it, standing out rather in front and showing to the disadvantage of the main building. I assume that it is intended to build a model set of farm buildings, of stone, combining all the best features which have been approved in modern times, economising labour by convenient arrangement of the different offices, the stalls and sheds for stock, and the barns and cellars in which forage, roots and ensilage are stored. The convenient arrangement of farm buildings should form part of every farmer's education, and he should be trained to have an eye to economy of time and trouble in the feeding and general management of stock. These two principals, indeed, are interdependent on each other, for the latter is not feasible without the former, while the former has no *raison d'être* without the latter. A block of land lying to the west, between the College and the town of Guelph, appears to offer the best available site for the new buildings; and as land is tolerably certain to go on increasing in value in that locality, it would seem advisable that the Provincial Government should purchase the block, and erect the new farm buildings upon it.

The soil of the College farm is a strong loam for the most part, and in some places a stiff clay, well adapted to the growth of heavy crops of mangels, maize, wheat and other crops requiring a strong staple of soil; while yet again there are lighter soils suitable for lighter crops, and affording the variety which is so useful from an educational point of view, in an establishment of this kind. A well has been sunk, some distance away, on the farm, and an automatic windmill pump provides a supply of excellent water to four different fields whose corners converge at that point. The value of this simple arrangement is obvious on stock farms, where, next to food, water is a matter of first importance. Ensilage is followed to some extent, but chiefly experimentally for on the farm which can produce such excellent crops of roots, ensilage is not so valuable as elsewhere. Professor Brown's experience with ensilage has not at present made him enthusiastic in its favor, though he grows with great success the best of all possible green crops for silos, viz., green maize. Ensilage finds, however as it should find a place in the economy of the College farm, and in the course of a few seasons it is probable that its exact measure of usefulness will be ascertained. So far, however, it is not considered a good thing for cows in milk, unless when fed in moderation and in conjunction with other kinds of food. The idea that it will supersede forage and be applicable as the chief food for stock in winter, as grass in summer, does not find any favor with the staff at Guelph; but that it may be used to some extent in place of roots, and that it is a very useful thing to feed along with dry forage, are points that are, so far, allowed to pass. The chief difficulty with it lies in the more than ordinary care that is required to preserve it—care so much greater than is required with roots, or hay, care which the rank and file of farmers are not well calculated to bestow, particularly in a new country like Canada.

The varieties of cattle and sheep on the College farm at Guelph are more numerous than we should find at any other single establishment in any country. There are no fewer than twenty breeds of cattle and sheep, ten of each, and all of British origin represented in the live stock department; and not a few of the animals are first-rate specimens of their respective breeds, while several have won much fame in England. The most famous of the shorthorn bulls is Rob Roy, (45484) bred by Mr. J. A. Gordon, Udale, Scotland. This splendid beast is a rich red in colour, with magnificent shoulders, showing no coarseness at all, deep and finely shaped; an extraordinary breast, coming well forward and extending in width too, down to the level of the knee joints; a grand middle, with well sprung

ribs and powerful loins: excellent hind quarters, too, fleshy and well proportioned; and lastly, splendid outlines, the underline being almost as straight as the upper, which is as near perfection as we could wish to see. This fine bull is four years old, and his live weight is 2,380 lbs. He is calculated to leave his mark on the bovine stock of Ontario. Then there is Sir Leonard, a handsome roan bull, bred by Mr. Hugh Alynor, of West Dereham, Norfolk, and several shorthorn cows and heifers; one of the later, Baroness Wild Eyes, a handsome red and white, bred by Mr. Evans of Uffington, Shrewsbury, has a pedigree of a very aristocratic character.

There are also several high-class Herefords, and amongst them Conqueror (7510), a grand bull, bred by Mr. Cawardine, of Stockton Bury. Conqueror was purchased from Mr. Tait the Queen's steward, and was sired by Lord Wilton, who, at eleven years old, fetched £1,000. Bloomer, a beautiful cow, bred by Mr. Hill, of Church Stretton; and Cronkhill Duchess 2nd, by the same breeder; and Sunflower bred by Her Majesty the Queen, all of them excellent cattle, comprise the female element of the Herefords, and form a nucleus from which a great deal of excellent blood ought to radiate throughout Ontario.

Several very good Aberdeen Angus polled cattle, and among them Kyra (4969), a grand, even, kind, and fleshy cow, who was never beaten in Scotland, form an interesting and valuable feature in the bovine department of the farm, belonging as they do to a breed, which having no horns and being excellent beefers, is increasing in popularity on both sides of the Atlantic. There is also another and a remarkable cow of this breed, possessing all the well known characteristics of the breed, save that she is red instead of black—red which is said to have been to a large extent the original colour of the breed. This one, however, though red in color herself, throws black calves to a black bull, and her colour, as it would seem, is only a remarkable instance of bovine atavism, or "throwing back" to a by-gone type. There are also several excellent Galloways, the other type of black polled Scotch cattle.

Ayrshire, Devons, West Highlanders, Guernseys, and Jerseys, complete the breeds of cattle, the Welsh breeds and the Keries not being thought suitable for Canada. One other English breed, the red polled Norfolk, has no representative, and I cannot but think the College authorities would be well advised to import a few specimens of this very practical and useful breed. The origin of these red polled cattle is unknown, but it is supposed to be the result of importations of Scotch polled cattle into Norfolk centuries ago. The Scotch polled cattle are now black in colour, but if their original colour was red, we have presumptive evidence that the Norfolks sprang from that source and that they have preserved the ancient tint, whereas the Scotch polled cattle have lost it.

The breeds of British sheep, most of which, and of the cattle too, were purchased in the spring of the present year in England and Scotland, by Professor Brown, are represented by Lincolns, Cotswolds, Leicesters, Highlands, Cheviots, among the longwools, and Oxford, Hampshires, Shropshires and Southdowns, among the shortwools. I venture to apprehend that the shortwools will be found more suitable than the longwools to the Canadian climate, once they become thoroughly acclimated, and it will be interesting to watch their development or deterioration, as the case may be, and the degree to which any one of them may ultimately prove more suitable than the others. My own opinion inclines in favour of the Southdowns first, and Hampshires or Shropshires next.

The Guelph College and Experimental Farm is supported by the Ontario Government, and is an honor to the Province. It exists primarily for the education of young farmers in the higher and better forms of agriculture, and next for the improvement of the breeds of domesticated animals. The students are encouraged to earn their tuition and subsistence by work on the farm, by the tending of stock, by gardening and the like, and it is within the capacity of energetic young men to do this without prejudice, and rather with stimulus, to their academical studies. This, indeed, is the true way to produce high-class farmers, viz by a harmony and unity of practice with science. I am free to acknowledge my warm admiration of the Guelph College as an educational institution of the highest value and to declare my conviction that its influence for good on the Agriculture of Canada will be great in the immediate future, and greater still in the generations to come. As a lover of agriculture, then, the noblest occupation of man, and the most ancient of human pursuits, I warmly congratulate the Ontario Government on the generous way in which they support the Agricultural College at Guelph.

The agriculture of Southern Ontario is far ahead of that of any other part of Canada, and will compare not unfavorably with that of the best counties of England, all things considered. As a cheese-making district it is unsurpassed, if even equalled, on the American continent, and it may eventually become one of the best butter-producing districts of that vast country. A creamery is being established on the College farm, and this will add greatly to the educational value of this institution. I have elsewhere stated my opinion, *cum grano salis*, that Canada ought to win over to herself a good share of the West Indian trade in canned butter—a trade which is so profitable to Denmark; and the way to do it is to extend dairy tuition by means of creameries. In a former report, written for the Dominion Government, I gave my impressions about Canadian dairying, and as they are just as applicable in 1884 as they were in 1880, I venture to repeat them.

"The Canadian dairy-farmer has several important advantages over his English contemporary, not the smallest of which is this: he can grow at a very moderate cost, very large crops of forage for

winter use; clovers and timothy flourish well on most soils in Ontario, and I should say that rye-grasses would also, though I did not find they were much employed, if at all, in the growth of forage; I think they might be used to advantage. It is also clear, from what I saw in many places, that he can raise abundant crops of swedes and mangolds, and very good ones of carrots, parsnips, and the like. Here then, after the question of water, are the first requisites of successful dairy-farming. A rotation of crops is just the system to reinvigorate the older soils of Ontario, which have been overcropped with wheat, and rotations work well in dairy-farming. It is true that good natural pastures are scarce in the province, if indeed there are any at all which deserve the name from an Englishman's point of view (the best grass land I saw in Ontario was in the neighbourhood of London, and on the way to Hamilton); but, as I have said, clovers, etc., grow well, and they will answer capitally for pastures for a year or two, a regular succession of them being provided, and it is a simple matter to produce a large supply of green corn—that is, maize cut before it comes to maturity—for soiling in summer when the pastures run out. The rotations may be as follows: 1. Wheat or oats; 2. Roots and green crops for soiling; 3. Oats or barley, seeded down with artificial grasses; 4, 5, and if advisable, 6, Grass for forage and pastures. These rotations admit of endless variation, and in a country where no fossilized restrictions as to cropping exist, as they do in England, the farmer can always grow the crops that suit his purpose best. The practice at Bow Park is to sow western corn, which is a luxuriant cropper, thickly, in drills of eighteen or twenty inches wide; in this way the space between the drills is easily horse-hoed, until the corn is a foot or more high; the corn grows rapidly, and effectually smothers the weeds and wild grasses which grow vigorously in so forcing a climate. In Canada, as in England, the axiom is true that nothing cleans the soil of weeds so effectually as a heavy cultivated crop of some kind or other. If all the western corn is not wanted for soiling, the balance is cut and stooked while the leaf is still green, and the grain in the milk, and it is left out in the fields and fetched in as it is wanted in winter; in this way it makes very good forage, and the stalks, leaves, and ears are all passed through the chaff-cutter, and all consumed by the stock. A similar system may be followed with any other kind of soiling crop—that is, making into forage for winter that portion of it which is not wanted for soiling, or converting it into ensilage.

"As in the United States so in Canada, cheese-making has had more attention than butter-making, more skill and investigation have been applied to it, and cheese is consequently ahead of butter in average quality. It is, however, probable that the climate and soil are better adapted for the former than the latter; a moist, cool climate, and a natural herbage full of delicate and succulent grasses, appear to be best suited for butter-making; still, it is true that in France, for instance, excellent butter is made where the land is almost wholly under arable cultivation, and the cattle are almost entirely fed on artificial grasses, etc.; and again, a hot climate induces excessive respiration in cows as in other animals, and where this is, there is a larger expenditure of fat from the tissues, and a smaller supply of it to the milk glands. Be this as it may, however, the cheese of Canada in many cases is very good, while the butter is scarcely of more than second class quality, but it cannot, at the same time, be denied that the present high quality of the cheese is owing to the adoption of factories some twelve or fifteen years ago. The same thing, indeed, may be said of the United States, whose cheese—some of it of high average quality, while some will rank as first-class anywhere—was of a very inferior character before Jessie Williams established the first cheese factory near Rome, in the State of New York. It may be mentioned here that at the late International Dairy Fair in New York, the highest premium was carried off by Canadian cheese. Cheese factories are already numerous in Canada, while creameries, on a corresponding system for butter-making, are as yet few and far between; and so it follows that cheese is a centralized and butter an isolated manufacture, the one receiving collective and the other individual study and attention. Thus it is that cheese making is better understood, alike in its principles and practices, than is the case in the sister industry. I must, however, not omit to say that I have tasted several samples of butter in Canada that would be hard to beat in Ireland, and harder still in our London dairy shows. The most conveniently arranged and best equipped cheese factory I saw in Canada belongs to Mr. Ballantyne, M.P.P.; it is known as the Tavistock factory, and is situated a few miles from Stratford. The milk received daily, at the time of my visit, was about 17,000 lb. from nearly 1,000 cows, but this was in the latter part of September. Mr. Ballantyne contracts with his patrons to make the cheese for them at 1½ cents per lb., and the cheese I saw there was of very good quality, well made and carefully cured; the temperature of the curing-room is kept at about 80° for spring cheese, and 75° for summer, and at 65° for rich autumn cheese. The quantity of salt used is 2 to 2½ lb. per 1,000 lb. of milk; the smallest quantity is used when the curd is driest.

"Mr. Ballantyne for many years past has paid much attention to the subject of cheese-making, as also have several other prominent dairymen in Ontario, and their united labors have done much towards raising the cheese of the Dominion in the estimation of buyers in England. Formerly there was great difficulty and uncertainty in making autumn cheese in Ontario; it was liable to be puffy and porous; and, as the whey was not always got well out of it, the flavour was frequently unpleasant. This difficulty has been completely overcome by 'ripening' the milk before adding the

rennet to it. Mr. Ballantyne thought the matter out in his mind, and argued it to me in this wise: The summer's milk kept through the night is not so deadly cold as the autumn's, and so is in a more natural condition; its warmth has brought it into that state which produces the best cheese—that is, it has ripened somewhat, because warmth as well as time is necessary to the ripening of anything. He declares his belief, further, that the best cheese cannot be made from fresh, warm milk, because, though it is of course warm enough, and has never been cold, it has not the required age, and so is unripe. Hence he prefers that one half of the milk he makes cheese from should be twelve hours old, and this, being ripe enough in itself, ripens the fresh morning's milk when the two are mixed together. In summer the ripening of the evening's milk is enough for the purpose, but in the colder weather of autumn it is not, so the morning's and evening's milk are warmed up together to a temperature of 90° or so, and allowed to stand several hours before the rennet is mixed with them for coagulation, and this is done because the autumn evening's milk has been too cold to admit of enough if any ripening. As the mass of milk stands at the temperature named, it ripens, and the difficulty previously so common disappears, the autumn cheese having all the warmth and mellowness of character of the summer cheese, and it is not liable to be injured by the excessive heat of the summer climate; this autumn cheese, in fact, take it for all in all, is probably the best of the season, whereas it was formerly, in many cases, the worst. The grand principle of the Cheddar system of cheese-making—which, by the way, is probably the best system the world knows—consists in the ripening which the curd gets after separating it from the whey, and before salting and pressing it. This ripening comes of keeping the curd warm, and exposing it to the air. But even in the Cheddar system it is well known that autumn cheese does not mature like that of summer, and this, Mr. Ballantyne declares, is owing to the evening's milk of autumn not having a chance to ripen like that of summer. I was pleased to find that Professor Arnold, an able exponent of the Cheddar system, has done much good in Canada in teaching dairymen how to manage floating-curds—that is, by exposing them longer in the vat, and by developing more acidity to checkmate the taint which is common to floating curds. The milk is generally delivered once a day to the Canadian factories, and the farmers, under pain of having their milk rejected, are required to take proper care of the evening's milk, and to deliver it in good condition at the factory. This done, the transit is supposed to do the milk good rather than harm. The dairy cattle in some parts of Ontario will compare not unfavourably with those of many parts of England. Shorthorn grades prevail, and it may be said that, wherever a better class of cattle are found, the improvement is due, as a rule, to the shorthorn element."

The celebrated Bow Park stock farm is situated within a horse-shoe bend of the Grand River, near to the stirring town of Brantford, in Western Ontario. It has an area of some 500 acres, the river forming a ring fence almost entirely around it. The 'lay' of the land is a gentle slope to the South, and the soil a rich loam, suitable to the growth of all the crops required on a stock farm. It was established first of all by the Hon. George Brown, of Toronto, whose tragic death by the bullet of an assassin shocked the people of North America, and soon became the property of an influential company, but now, as I am informed, is owned chiefly by an Edinburgh gentleman. The manager is Mr. George Hope, who takes much pride in the magnificent herd of pure-bred shorthorns by which he is surrounded. These choice animals, of which there is a larger number than will be found, I assume, at any other single place, are fully maintained in quality and condition by the soil and climate of this part of Canada, and their blood is being extensively disseminated throughout many of the great stock-raising regions of North America. All this will tell an important tale, in the generations to come, on the quality of the fat-stock which are being exported to England and Scotland in rapidly increasing numbers.

As I have before stated, we joined the North-West party at Toronto on the 6th of September, and proceeded thence to Owen Sound, a thriving port on Lake Huron, passing for over a hundred miles through a rich, undulating country, well adapted to farming. At Owen Sound we went on board the *Alberta*, one of a trio of powerful steamboats recently established for the lake trade by the Canadian Pacific Railway Company. These boats, which were built on the Clyde, and sailed or steamed across the Atlantic, run in forty hours direct to Port Arthur, in the north of Lake Superior, which for the present is the eastern terminus of the western division of that tremendous railway system. The scenery on the Great Lakes was much admired, and a good deal sketched by members of the party, particularly the grand volcanic scenery in Timudor Bay. On landing at Port Arthur the British Association scampered away, with all the gleesomeness of a parcel of school boys, in search of botanical specimens in the woods, and were rewarded for their pains. Port Arthur is now a thriving town, made and sustained chiefly by the Canadian Pacific Railway Company, and boasting a large grain elevator, numerous hotels, warehouses, steamboat wharves, and the like.

The country through which the railway runs westward from Port Arthur to Winnipeg, a distance of 429 miles, is designated a "hard country," as also is the country through which it has yet to be built eastward from Port Arthur to Ottawa. There are, however, localities along the route where farming is done on a fairly good soil, and in course of time this immense territory will be taken up

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by the overflow of the scores of millions of people which the North-West is destined to contain. Railway employees and their families are already clearing land, and so far find a profitable market for the produce they raise. These incipient clearings will form nuclei for the farming communities of the future, which the railway is sure to encourage, and so the work of colonization will go on with the years as they roll. Beautiful scenery occurs in places, and the Lake of the Woods, a sheet of water extending ninety miles, containing almost innumerable islands, peninsulas, promontories, and suggesting the future Saratoga of Canada, is one of the most beautiful spots on the American continent. The geological and botanical features of this locality are very interesting, and the great mineral and timber wealth of the vast region to the north of the actual and prospective railway in Ontario will provide a grand revenue in the future, for minerals of different kinds are known to exist in vast quantities. By the Lake of the Woods, and near to the town of Rat Portage, we visited an interesting geological spot—the junction of the Huronian and Laurentian rocks, which crop out there on the surface. We broke off portions of rock showing the actual junction, and one of them lies beside me as I write.

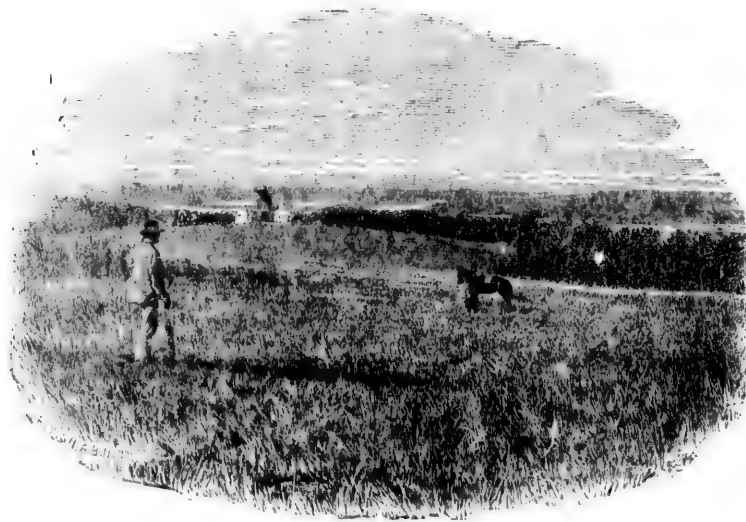
The train which, from Port Arthur to the Rockies and back again, was so munificently placed at the disposal of the British Association, was under the personal superintendence of Mr. Egan, the manager of this portion of the C. P. R. system, and a most courteous gentleman. The train was one of the best and handsomest, probably, that was ever put together in any country. It consisted of five new Pullman cars of the best that can be made, and costing \$15,000 each. They were not gaudy, as many American Pullmans are, but highly ornamental nevertheless, and most substantial in character. Day and night alike we travelled in these splendid vehicles, in luxurious ease and comfort; and with an utter absence of tedium or fatigue. These cars belong to the C. P. R., and the Pullman Co. have no control over them. The train thundered along the vast prairie, and we sat or slept in luxury, or wandered from one end of it to the other to stretch our legs, or paid visits to friends in other cars as we felt inclined. The journey, indeed, was one of sustained pleasure and interest, throughout, and it was justly regarded as the chief achievement of the Association, so far at all events as trips were concerned.

The road across the prairie was laid at unexampled speed. Three, four, and even six or seven miles were laid in a single day, in the most favourable portions of the route. A wide trench is scooped out on either side of the line, the earth thrown into the middle and levelled, and in this earth the sleepers are laid. Such a line may appear flimsy to an Englishman, but I can assure him that it carries the heaviest trains in safety, very smoothly, and at very high rates of speed. It will be all the better, no doubt, when it has become solidified by two or three years' use, yet at present it is an excellent road, well ballasted, and in capital condition. These remarks apply to the road west of Winnipeg right away to the Rockies, which was built by the company. East of Winnipeg the road was built by other parties, and finally handed over to the company to finish. True, this section of the road passes through a difficult country; bridges and embankments have been made, many of them of a flimsy character and on treacherous land. The weak places are now being firmly ballasted up with granite, ravines which were bridged are being filled in with solid stuff, and in a short time the road will be satisfactory throughout. This portion of the road has been a burden on the company so far, and for some time longer will continue to be so; but the burden is growing lighter, and in time will disappear. Fortunately there is abundance of granite along the route, and this is being employed to strengthen the embankments and to disestablish many of the trestle bridges. The weak places occur in the neighbourhood of lakes, whose waters permeate the loose subsoil where it is not sufficiently protected by heavy ballast and hard foundations. Elsewhere, and over by far the greater portion of the section, the road is good enough, so that the work of consolidating the balance is within measurable distance of completion. We, in any case, were carried safely over it, and may therefore speak well of it.

The Province of Manitoba—so well known by repute in Europe—is just now emerging from depression caused by inflated speculation in real property. This was a bubble which, by opening up the vast territory to the west, the Canadian Pacific Railway was sure to prick. Land has now come down to its legitimate and intrinsic value, or has even sunk below that level for the time being. Confidence, however, which never ought to have been lost to the extent it was a year ago, is now being restored, and enterprise will proceed at a regular rate, so that now is the time for emigrants to go out. The province, which has been greatly enlarged of late, has now an area of 123,200 square miles. It is one of five sister provinces in the North-West, the others being: Assiniboia, containing 95,000 square miles; Alberta, containing 100,000 square miles; Saskatchewan, containing 114,000 square miles; and Athabaska, containing 122,000 square miles. Manitoba has therefore an acreage of 473,088,000, of which a considerable portion is water. In many parts of the province the soil is of surpassing richness, producing excellent crops of wheat, barley, oats, turnips, potatoes, carrots, onions, etc., etc., the wheat particularly being of very superior quality, hard and dry, and much sought after by American millers for grading up the softer wheats of southern districts. An important natural principle in respect of the North-West must be borne in mind, viz., that wheat grows in a manner most nearly approaching perfection, so far as milling properties are concerned, at the northern

limit of its successful growth. This matter stamps for ever the North-West Territory as perhaps the best wheat-growing region in the world—better by far than any which the United States possess, for Alaska is outside the limit of successful wheat production. Fall ploughing for wheat is done as extensively as time permits, and it must be remembered that the severe winters of Canada do a great deal of the farmer's work for him, in the way of pulverising and mellowing the soil, so that harrowing in the seed is a simple operation, quickly performed, on fall-ploughed land.

A great deal of swampy land, which is excellent for crops when drained, occurs here and there in Manitoba; elsewhere there are lighter soils, some of which are unsuitable for agriculture; and there are patches of alkaline land which, until a few ploughed crops have been taken, are more or less detrimental to the growth of grain and grass. Timber and water are very unevenly distributed, and generally occur in company with each other. Water, however, can usually be obtained anywhere by boring for it, and windmill pumps ought to be of great service to the Manitoban farmers. Water is sometimes conserved for stock by throwing a weir across a slough, and basin-like hollows, or "meers," scooped out in the prairie clay, are found to answer fairly well as reservoirs. It is tolerably certain that properly constructed meers, as we have them on the Derbyshire hills, lined with concrete first, then with four inches thick of well tempered clay firmly beaten together, and lastly, with well packed stones for protection, would answer well in Canada.



A PRAIRIE SCENE.

Trees, indeed, are found on the prairies, but chiefly on the banks of the rivers and in the swampy lands, and it is to the recurrent prairie fires that the scarcity of timber on the great plains may be attributed. Wherever the fires have found a natural check, as by the rivers and swamps, we find trees for the most part; and chiefly on the eastern banks of the rivers which, by affording a boundary, have continued to check the fires that are driven onward by the prevailing west winds. At various places along the road through the North-West, at the Bell Farm, at Portage la Prairie, and elsewhere, trees which have been planted are growing apace. The practice of planting trees on the prairies should be encouraged by Government subsidies or rewards, for, apart from the question of an increased rain-fall, of fuel and of shelter, nothing can possibly adorn those great plains like trees. Trees, indeed, are the greatest natural ornament any country can possess, not excepting even water and mountains, and they would tend to embellish the life of man on the prairies.

The grain-growing capacity of the soil is the leading criterion of its value, probably, in Manitoba and the North-West generally, and most likely will continue so for some time to come, because that region will become the chief granary of the American continent and remain so; but it is none the less true that its ability to produce excellent roots and green crops is a factor whose importance will be utilized extensively in years to come. A purely grain-raising region is an agricultural anomaly which cannot last, and it is a fact of great potential value to this vast territory that its soil will pro-

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duce all the crops which contribute to the plenary welfare of both men and animals. Cattle, horses, pigs and poultry are inseparable from the comfort of man in all agricultural communities, and the same may also be predicated of sheep; but all of these demand arrangements and provisions more or less intricate, in the form of shelter and food, provisions which can in a great measure be dispensed with while the land is devoted to grain-raising only. The process of populating the North-West with domesticated animals will be contemporary with the provision of shelter, water, and suitable food; and though the process may be a slow one, it will be perfected in time. In the foothills of the Rocky Mountains it will be much more rapid, for there exists in that region a rich natural herbage, a good supply of water for the most part, and abundance of "land shelter" among the hills and dales.

We passed along through the Provinces of Assiniboia, containing 95,000 square miles, and Alberta, containing 100,000 square miles, at least fifty per cent. of which is said to be good land available for agriculture. We saw several of the experimental farms which have been established by the C. P. R. Co., and found various cereals, roots, and garden vegetables growing successfully on the new prairie soil. The soil varies from a dark coloured clay to strong loams, and light sands, and affords scope for all kinds of agricultural fancy. But the handsomest country we saw was from Calgary up the slopes of the Rockies. This is the great ranching country, and we saw many cattle roaming about the pastures which adorn this undulating district—a district which stretches a long distance to the north and south of the railway. It must be admitted that the advantages which this country affords for cattle-raising are very extensive and important; for, as the isothermal line runs in a north-westerly direction along the prairies, the climate at the Rockies is habitable and even genial in a degree of latitude which is desolate on the Atlantic side of Canada. At a point five thousand feet above the sea level, in the Rocky Mountains, we found the air so mild that no overcoats were wanted, even at five o'clock in the morning, although we had come up the mountains in a snow-storm the previous evening. Above this point, which is the highest the railway attains in the Kicking Horse Pass, the unnumbered snow-clad peaks of the mountains shoot up into the clear air ten or twelve thousand feet above us, forming a spectacle grand, sublime, magnificent, and well repaying a thousand miles' journey over the prairies! The splendid pine trees with which the mountains are adorned creep up the peaks till they are stopped by the glaciers and the eternal snow, and there is abundant interest for the lovers of botany and geology. One magnificent day spent among the crags and ravines of British Columbia, brought us to the beginning of the return journey, many of us carrying away specimens of rocks, ferns and other flora, including even the wild gooseberry, which we found flourishing not far below the snow level.

A contrast more striking than that presented by the prairies on the one hand and the Rocky Mountains on the other will probably not be found. The one a vast plain stretching for a thousand miles, broken only by the deep courses of the rivers; the other a magnificent succession of snow-clad peaks, with glaciers streaking their rugged sides; of deep ravines, clothed with noble pine trees; of ragged crags and yawning chasms, with mountain torrents dashing themselves into foam and froth in their headlong course to the lowlands. And through this scenic panorama, this wondrous display of geologic grandeur, the Canadian Pacific Railway wends its way to the Pacific Coast. A grand highway, this, whose commercial value will become enormous, whose military importance may some day serve the Empire well in time of need, and whose charms for the traveller will grow as the centuries roll along. When Calgary has become a city boasting its tens of thousands of citizens, when the foothills of the Rockies have been laid out in pleasant farms, with cattle and sheep without number, and when the mountain passes are dotted with the summer homes of merchants' families, all of which will come to pass in time, this grand Canadian Continent will have achieved its obvious destiny as one of the greatest homes of the Anglo-Saxon race.

The eastern slopes and foothills of the Rockies and the adjacent prairies are destined soon to resound, as indeed they already do in part, to the lowings of herds and the bleatings of flocks, and they will become one of the most important cattle-raising districts on the American continent. But ranching has various disadvantages in its present condition, and cannot well prosper save under the personal supervision of an owner or owners. Hired men are apt to render only such an amount of work and care as they deem themselves amply paid for, and absentee ownership is not calculated, as things are, to meet with much success. A fruitful source of loss occurs in calves when branding time comes round, many of them passing then into the ownership which happens to be most vigilant; for until they are branded, who can say to whom they belong, where cattle roam in common over millions of acres? Cattle that are out of condition when winter comes on are apt to perish in the cold, unless they are carefully fed and sheltered, and the Cochran's Ranching Company suffered severely one winter in this manner, with cattle that were out of condition after being driven northward from Montana, too late in the autumn. I am assured, however, that cattle in good condition to start with will stand the winter bravely, keeping on their flesh till long after Christmas. Grass, water, forage for hard winters, and shelter both natural and artificial, are indispensable to the continued success of a rancho. The winter varies in severity, so that the amount of provision to be made for stock, in the way of food and shelter, is always problematical; but the safe thing is to provide enough for any

probable or possible contingency of weather, for an early winter and a late spring. It will thus be seen how necessary it is that an owner should be in residence at a rancho.

I am assured on good authority that fine crops of roots and oats can be grown with very crude cultivation, and that, even where the land in its natural state appears barren, maize and cereals prosper amazingly. The ranchers depend a great deal on the hay, which is self-curing—that is, on grass curing as it stands, to be consumed *in situ*; and it is a peculiarity of the native grass that it should cure in this way, providing frosts do not cut it down before it has had time to do so. Generally speaking, the cattle subsist very well through the winter on this self-cured hay, for the winds as a rule blow it bare of the dry snow; but when it happens to be deeply buried in snow, and remains until the snow is frozen so as to resist the wind, then the cattle are in danger of perishing for want of food, and here it is that a supply of forage is so necessary and beneficial. Dairy farming, in connection more or less direct with ranching, will probably open out in Alberta, where, it is asserted, and I think not unfairly so, that the country possesses all the natural conditions essential to that business. A young English rancher of two years' standing, informed me that he contemplated forming a herd of dairy cows to let out to a dairyman on the "half-sales" system. This, however, necessitates the fencing of land and a provision of buildings and forage, and so can hardly become general for a long time to come. It is an item of some significance, however, that such an idea should already be entertained in the neighbourhood of the Rockies, and it serves to illustrate the speed at which things are moving in that region since the advent of the railway.

The North-West has very large deposits of coal, it is known, in places, there is reason to suppose there are many others awaiting discovery. In some of the banks of the rivers, coal is seen protruding in seams many feet thick, and we brought with us specimens of apparently excellent coal, which was quarried in the Medicine Hat district. At Langevin, 20 miles west of Medicine Hat, and 69½ miles west of Winnipeg, we saw a gas well, which was then driving a twelve horse-power engine; the gas had been struck at 800 feet deep, while boring for water, and is now being used to bore another well for water. It is indeed impossible to say what may not be in store in this land of wonders.

At Indian Head, in the Province of Assiniboia, and 312 miles west of Winnipeg, we "laid over" for a few hours to see the famous "Bell Farm," named after Major Bell, the manager. This immense undertaking is part of the system of the Qu'Appelle Farming Co., and has been established to demonstrate the grain-raising capacity of this portion of the Great North-West. The farm covers an area of ninety square miles, or about nine and a half miles square, and contains some 57,000 to 58,000 acres. The date of our visit was Sept. 14, in the midst of harvest, which this year was much later than usual, for the harvest is usually over by the middle of August. The day, unfortunately, was Sunday, so that we did not see the twine-binding harvesters at work, but Major Bell met us at the station with a string of conveyances, buggies and spring waggon, and off we went for a drive over this gigantic farm; some twenty vehicles in single file formed a procession which had a very remarkable appearance as it wended its way through those enormous fields of waving grain. There are forty-five reapers, string-binders, whose capacity on occasion is 800 acres a day, and a large area of grain was already cut. Though the farm was started only in the spring of '82, there were this year some 7,000 acres under crop, in wheat, oats and flax. Next year there will be 14,000 acres, a good portion of the extra 7,000 acres of prairie sod having been already turned over at the time of our visit, and in this way the whole farm will be brought under cultivation. From 190 to 200 horses are on the farm, and these were reaping the grain, and would plough the 14,000 acres for the crops of 1883. So soon as the harvest is cut, the threshing machines, driven by straw-burning engines, are set to work. At convenient centres about the farm, wooden granaries are erected, and to each of these two threshers are appointed, one on either side, until the granary is full of grain. We saw eight of these threshers, so that four granaries are being filled simultaneously, and the machines move from one to another, till all the granaries are filled, and the threshing is over.

It will strike the English farmer as strange that the grain should be threshed in the field, direct from the stooks, and put in bulk into the granaries; but the wheat of the North-West is so hard and dry at this early period, that such a course is practicable and safe; it is, in fact, dry enough for milling at the same time. The object being to secure the grain as soon as possible, and straw being of no value, provide together sufficient explanation for the existence of granaries in the fields, in which the grain is safe until it is hauled to the railway in the winter.

The grain is sown by broadcasting sowers, at the rate of 1½ bushels of wheat, and 2½ bushels of oats, per acre. Beyond the normal staff of men employed the year round, extra hands are hired from spring to autumn. Sixty to seventy men are employed all the year, and the number is doubled during the busy seasons. Labourers earn \$30 per month, all found, and foremen \$40; or in other words, £6 and £8 respectively. The head foreman receives \$50 a month, with house and board all found. The wheat is sown, in the first instance, on prairie sod turned over once, in broad furrows, and not "back set," according to older practice on the prairie. A single ploughing for the first crop is thus made to suffice, and the yield is not found to be so deficient as to make a double ploughing advisable. As far as possible the sod is turned over in the autumn, and all grain is sown in the

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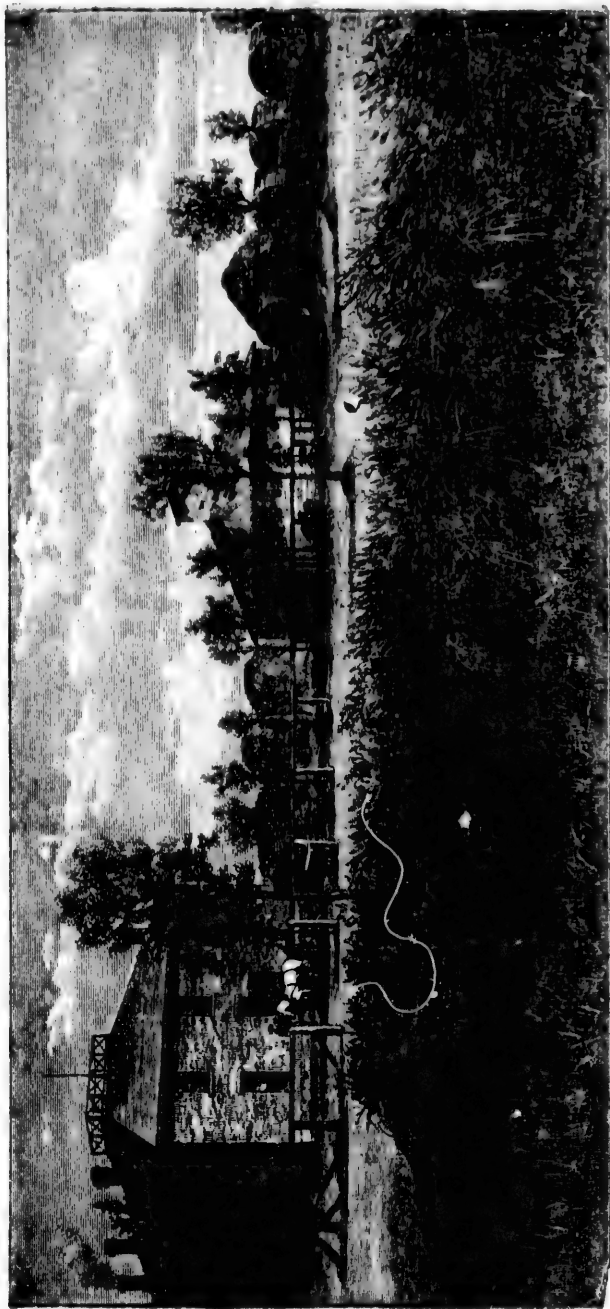
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"BELL FARM," INDIAN HEAD STATION, CANADIAN PACIFIC RAILWAY, 741 miles West of Port Arthur.

spring, autumn-sown wheat being inexpedient on the prairie. After the grain is sown a disc-harrow is first used, after which the land is harrowed again twice, with ordinary harrows. The disc-harrow is a valuable clod-crusher, and is at length being introduced into English agriculture. Red Fife wheat is the only variety grown, and the seed produced on the farm is used. The estimated yield of wheat was from 20 to 25 bushels per acre; last year the actual yield was 20 bushels, which was raised at cost, all things told, of 37 cents a bushel. This year the cost is expected not to exceed 32 or 33 cents.

A startling statement made to us by Major Bell was this: "I can afford to deliver wheat in Liverpool, after paying eight per cent. on capital, and at present rates of freight, at 20s. a quarter. This is 2s. 3d. a bushel, and if Major Bell's estimate of the wheat costing only 32 cents, or 1s. 4d. a bushel to raise be sustained, there remains 1s. 2d. a bushel to pay the freight and other charges, so that it would appear feasible for him to deliver wheat in England at 20s. a quarter. I give the statement *cum grano salis*, and decline to commit myself to it in any way.

The growing crops, as we saw them, certainly promised to yield Major Bell's estimate of 20 to 25 bushels an acre of wheat, and on some parts of the land we saw what I should estimate as a yield of 40 bushels. The stems tiller out to an extent I have not elsewhere seen, and I have by me a root plucked by myself, from which 31 stems spring. I might have found a still more prolific root if I had searched, no doubt.

An experiment in flax was made this year, on land that was ploughed to late for wheat or oats, and the 400 acres of flax we saw was ripening nicely and promised a very fair yield.

This vast farm is being laid out in sub-farms of 200 acres, each having its houses and buildings for the accommodation of foreman, men and horses. Orders are given by telephone from Major Bell's residence to each of these local centres, and in this way time and tissue are saved. The sub-farms are for convenience of prospective purchasers, and each of them has its garden and other appurtenances. Such farms will probably attract men of capital who prefer a cultivated soil, to the crude prairie, and that such is the destiny of Major Bell's scheme time will no doubt disclose.

So far, as Major Bell assured me, this vast concern is being run at a profit of 20 to 30 per cent on the capital employed; but the question of profit is one on which it is obvious I can give no opinion of my own. The farm is being "rushed," to use an American term, just as an Englishman would rush a cotton mill, and everything is done to realize the best return from land and labour from both land and labour. Remembering that Major Bell has virgin soil to work with, it is interesting to know that he has commenced a system of summer-fallowing on the older portions of his cultivated land. His plan is to fallow in turn one-third of the land each year, and he avers that under this method he will get as much from the remaining two-thirds as he would otherwise get from the whole. Of the soundness of this system we need entertain no doubt, especially in which artificial manuring is out of the question, and on a scale to which it is not applicable.

The fact is obvious that Major Bell is well qualified to run such a large concern with dash and energy, that he plans out his work on economical principles, that his men do not lose much time in mere transit from one part of the farm to another, and that profit and efficiency are his leading objects. He has also an eye to adornment, for he has planted twenty-five miles of avenue trees, twenty feet asunder, at a cost of \$26 a mile only, the trees which are poplar standards eight or ten feet high costing only ten cents each. In this particular Major Bell is setting an example which cannot easily be too much commended or too widely copied. Whether or not, however, the Bell Farm as a whole is an example of the line which profitable North-West farming must chiefly follow is a question which time only will solve, and on which I decline to offer an opinion. I am, however, free to admit that it is a plucky piece of agricultural enterprise well calculated to supply highly important data respecting prairie farming on a vast scale. In the presence of probable low prices of wheat for a long time to come it is possible that centralized agriculture of this sort may be multiplied in the North-West. In any case, to the Bell Farm is owing the existence of Indian Head, already a large town, containing a church and school, hotels, livery stables, etc., etc., and providing an additional nucleus for the gregarious propensities of our Canadian cousins.

My impression is that the North-West of Canada presents an opening for pushing young men of good conduct, healthy, sober, thrifty, and industrious. An extensive knowledge of British agricultural practices is not necessary to a farmer in the North-West, where farming is of the simplest imaginable character in which ploughs are used at all. Capital is most useful in Canadian agriculture, and finds a better reward than in England; when it is in the hands of men who know how to use it. But even men of small capital, and of experience in British farming, will be well advised not to embark at once in farming on their own account, but rather to hire themselves out to farmers already established, and thus to pick up tuition and cash at the same time. There is an old adage to the effect that "a man must pay for his learning." This, however, is not true in Canada, if men will hire themselves out as I have advised, for there a man is paid for his learning, and does not pay for it himself. He should also look around the country, north and south, and east and west, before he finally decides where to locate himself. Where land is so splendidly abundant, it is hardly worth his while to take hold of the first block he comes across. A new beginner in the North-West

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HOMESTEAD FARM AT KILDONAN, NEAR WINNIPEG.

must make up his mind to "rough it" for a time, until he can get his domestic surroundings fixed up properly, to which end the energies of a wife would be well directed. He must also be prepared to work hard, be steady, and be content with sparse society. Loungeurs find no congenial home in that country.

At the outset we placed ourselves, as a party, under the care and management of Sir Richard Temple, who, genial, considerate, and kindly as he is, won our warm regard, and from whom we parted at length with affection and regret. Perhaps the most remarkable member of the party was Dr. W. P. Cheadle, M.D., who, twenty years ago, in company with Viscount Milton, M.P., travelled across the North-West Territory, and over the Rocky Mountains into British Columbia. Everybody has read, or, if he has not, should read, "The North-West Passage by Land," which, the sequel of the arduous journey made by these two adventurous gentlemen, is one of the most entertaining books of travel in the English language. It was my good fortune to live in the same car as Dr. Cheadle during our trip, and I heard from him a good deal of interesting information about the country to the north of us. The North Saskatchewan, Dr. Cheadle thinks, is the garden of the North-West, so far as natural beauty, combined with good land, is concerned. Yonder is an immense country well wooded, well watered, rolling, hilly in parts, with excellent land, and abundance of natural pasturage. Well sheltered by the land and trees, this locality should turn out to be one of the best of the ranching countries, and should attract a good portion of the tide of emigration which is flowing, and will continue to flow, into the North-West. Dr. Cheadle informed me that, when he and Lord Milton wintered in the Saskatchewan Valley, their tired-out horses grew fat in the winter, though living entirely on what they could find, and were in excellent condition in the spring. Dr. Cheadle's reflections and reminiscences must have been of a singularly interesting nature as he thundered along with us in the train, over the prairies and mountains which had cost him so much pains to traverse on a previous occasion. To the attention drawn by Dr. Cheadle and Lord Milton's book to the North-West Territory, may in no small measure be attributed the action which was taken by the Dominion Government in opening up the close preserves of the Hudson's Bay Company, followed after a time by the confederation of the provinces of Canada into one political and commercial unit—the Dominion of Canada.

Much of the success and pleasure of our trip was owing to the presence with us of Professor Macoun, of the Dominion Survey Department, who was indefatigable in giving all the information possible to the members of the party. Professor Macoun is a botanist by profession, but there is probably no one better acquainted than he with the climate and soil, and the fauna as well as the flora of the North-West Territory. In that entertaining book of his, "Manitoba and the Great North-West," I find a good deal of reliable information about stock-raising, and he reasons as follows: "Naturalists are well aware that animals put on more fat in cold countries than they do in warm ones. In fact, to be fat is the normal condition of all northern animals when in health. On other occasions I have proved that climate, besides thickening the coat, actually fattened the animal, and this has been borne out by the importation of Texas cattle into Montana. These cattle actually become fatter on the Montana plains in winter than on their own native plains in summer." This, no doubt, is true, but it is a principle whose application is limited.

The following is Dr. Cheadle's account of the horses, taken from pp. 167-8 of the sixth edition of the "North-West Passage by Land": "We now prepared to leave our winter quarters. The first thing to do was find the horses, which had been turned loose at the commencement of winter. We had seen them or their tracks from time to time and knew in what direction they had wandered. La Ronde followed their trail without difficulty, and discovered them about eight or ten miles away. We were very much astonished at their fine condition when he drove them back to La Belle Prairie. Although very thin when the snow began to fall, they were now perfect balls of fat, and as wild and full of spirit as if fed on corn—a most unusual condition for Indian horses. The pasture is so nutritious that animals fatten rapidly even in winter—when they have to scratch away the snow to feed—if they find woods to shelter them from the piercing winds. No horses are more hardy or enduring than those of this country, yet their only food is the grass of the prairies and the vetches of the copces. The milch cows and draught oxen at Red River and in Minnesota, feeding on grass alone, were generally in as fine condition as the stall-fed cattle of the Baker Street Show." The district between Battle River and the Saskatchewan, lat. 53° and long. 112° and 113°, is marked in Dr. Cheadle's map as possessing "rich soil and fine pasturage."

Many progressive towns are rising up along the line of the Canadian Pacific Railway. Portage la Prairie is an important place, situated in the centre of the richest grain-growing plain of Manitoba, and having grain elevators, flour and paper mills, a biscuit factory, many hotels, and other well-built edifices, and a population of some 4,000. Brandon, too, 133 miles west of Winnipeg, is a flourishing town, with mayor and corporation, and a population of over 3,000, though only three or four years old. It has a fine situation in the Valley of the Assiniboine, and four large grain elevators. At these two places we received addresses and the hospitality of the people—at the latter place in the middle of the night, and at the former in the early morning. Virden, Moosomin, Broadview, Indian

Head, Qu'Appelle, Regina, Moose Jaw, Medicine Hat, and Calgary, are also incipient cities, and already important centres of trade.

Winnipeg, however, is the capital of Manitoba and the commercial capital of the North-West. It is the great distributing point for all of the country between the Red River and the Rocky Mountains. In 1870 it was a hamlet, with a population of 250 souls. In 1874 it was incorporated as a city, with an assessment roll of \$2,076,018; in 1882 it could boast of 25,000 inhabitants and an assessment of \$30,432,270, and its population is now about 30,000. It has broad and well laid out streets, lined with handsome stores and warehouses, private residences and public buildings. The city is lighted by electricity and gas, street railways are in operation, a fire brigade has been organized, and all the advantages and conveniences of an old established city are enjoyed by its inhabitants. The offices and plant of the western division of the Canadian Pacific Railway Company are situated in Winnipeg, and a fine station has been built.

THE SYSTEM OF SURVEY.

The Canadian North-West is laid off in townships six miles square, containing thirty-six sections of 640 acres each, which are again subdivided into quarter sections of 160 acres. A road allowance, having a width of one chain, is provided for on each section-line running north and south, and on every alternate section-line running east and west. The following diagram shows a township with the sections numbered:

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The sections are apportioned as follows:

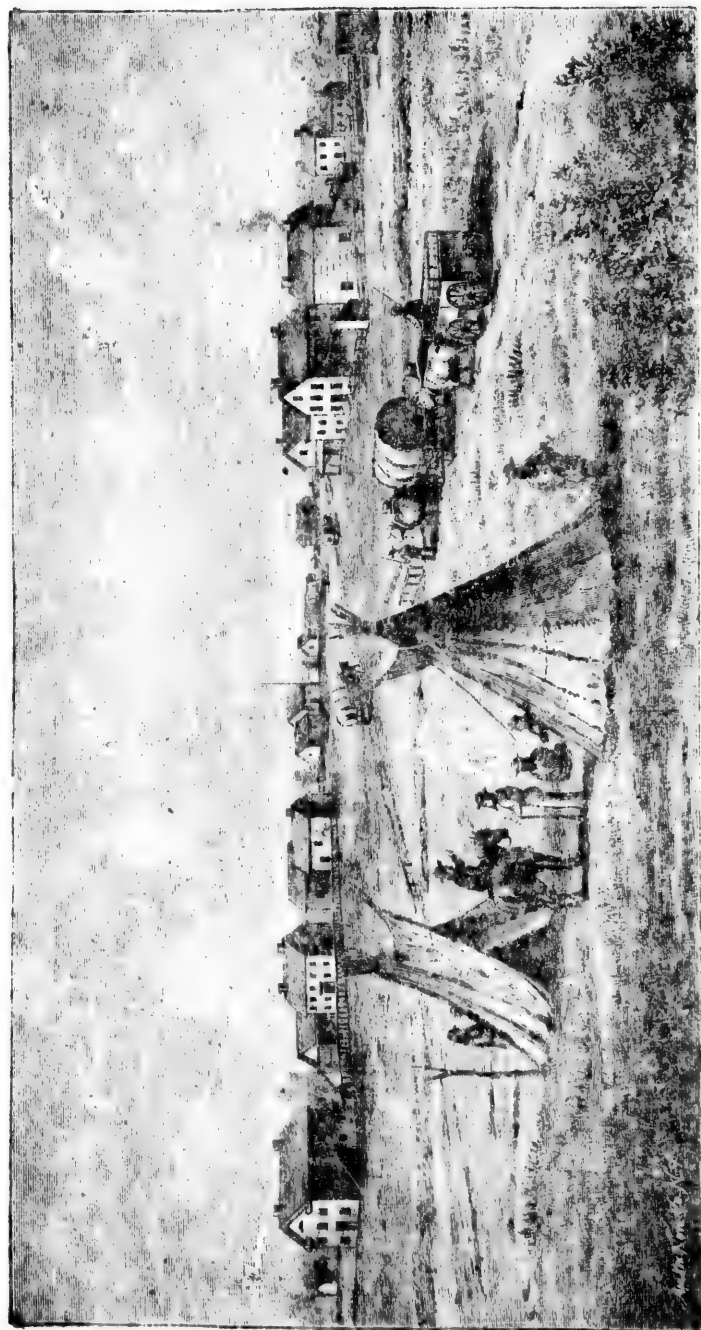
OPEN FOR HOMESTEAD AND PRE-EMPTIONS.—Nos. 2, 4, 6, 10, 12, 14, 16, 18, 20, 22, 24, 26, 30, 32, 34, 36.

CANADIAN PACIFIC RAILWAY SECTIONS.—Nos. 1, 3, 5, 7, 9, 13, 15, 17, 19, 21, 23, 25, 27, 31, 33, 35.

Nos. 1, 9, 13, 21, 25, 33 along the main line, Winnipeg to Moose Jaw, sold to Canada North-West Land Company, the balance of their lands being in Southern Manitoba.

SCHOOL SECTIONS.—Nos. 11, 29 (reserved by Government solely for school purposes).

HUDSON BAY SECTIONS.—Nos. 8 and 26.



WINNIEG. IN 1871

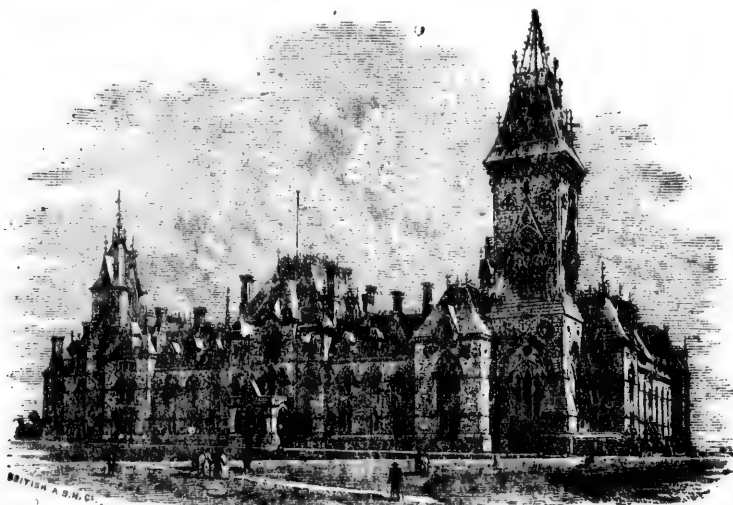


WINNIPEG IN 1888.

REGULATIONS FOR THE SALE OF C. P. R. CO.'S LAND.

The completion of the Canadian Pacific Railway to the summit of the Rocky Mountains, 960 miles westward from Winnipeg, and the rapid progress made in the Government Surveys during the past season, enable the Company to offer for sale some of the finest agricultural lands in Manitoba and the North-West. The lands within the railway belt, extending 24 miles from each side of the main line, will be disposed of at prices ranging from \$2.50 per acre upwards, with conditions requiring cultivation. Prices of lands without conditions of cultivation can be obtained from the Land Commissioner. When cultivation or settlement forms part of the consideration, a rebate for cultivation will be allowed as hereinafter described.

These regulations are substituted for and cancel those hitherto in force.



DEPARTMENTAL BUILDINGS, OTTAWA—EAST BLOCK.

Terms of Payment.

If paid for in full at time of purchase, a deed of conveyance of the land will be given; but the purchaser may pay one-sixth in cash, and the balance in five annual instalments, with interest at six per cent. per annum, payable in advance. Payments may be made in land grant bonds, which will be accepted at ten per cent. premium on their par value and accrued interest. These bonds can be obtained on application at the Bank of Montreal, Montreal, or at any of its agencies in Canada or the United States.

Rebate.

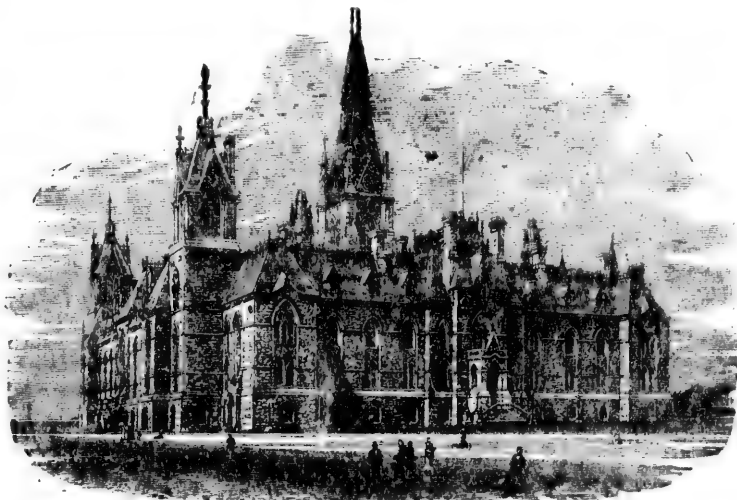
A rebate of from \$1.25 to \$3.50 per acre, according to the price paid for the land, will be allowed on the acreage actually cropped, on the following conditions:

1. The purchaser will not be entitled to rebate unless at time of purchase he enters into an undertaking to cultivate the land.
2. One-eighth of the land contracted for to be brought under cultivation within four years from date of purchase. In cases where purchasers do not reside continuously on the land, at least one-eighth of the whole quantity purchased shall be cultivated during each of the four years.
3. Where a purchaser fails to carry out fully the conditions as to cultivation within the time named, he will be required to pay the full purchase price on all the land contracted for. But if, from causes beyond his control, proved to the satisfaction of the company, a settler so fails, he may be allowed the rebate on the land actually cultivated during the four years, on payment of the balance due, including the full purchase price of the remainder of the land contracted for.

General Conditions.

All sales are subject to the following general conditions :

1. All improvements placed upon land purchased to be maintained thereon until final payment has been made.
2. All taxes and assessments lawfully imposed upon the land or improvements to be paid by the purchaser.
3. The company reserves from sale, under these regulations, all mineral and coal lands ; and lands containing timber in quantities, stone, slate and marble quarries, lands with water power thereon, and tracts for town sites and railway purposes.



DEPARTMENTAL BUILDINGS, OTTAWA—WEST BLOCK.

4. Mineral, coal and timber lands and quarries, and lands controlling water-power, will be disposed of on very moderate terms to persons giving satisfactory evidence of their intention and ability to utilize the same.

5. The company reserves the right to take without remuneration (except for the value of buildings and improvements on the required portion of land) a strip or strips of land 200 feet wide, to be used for right of way or other railway purposes, wherever the line of the Canadian Pacific Railway, or any branch thereof, is or shall be located.

Liberal rates for settlers and their effects will be granted by the company over its railway.

DOMINION LAND REGULATIONS.

Persons desirous of obtaining free homesteads from the Dominion Government should obtain copies of the Dominion Land Regulations. Generally speaking, it may be stated that all even-numbered sections may be obtained on the condition of three years' residence and a specified cultivation.

IN THE PROVINCE OF NOVA SCOTIA.

The trip to the Rocky Mountains having been brought to a pleasant and successful end, and having *en route* visited the flourishing city of Ottawa, inspected the splendid Parliamentary and Departmental Buildings, the beautiful Library, the excellent Geological Museum, and various other interesting spots, all of which are greatly to be admired, I found myself again in company of some of my North-West companions, from whom I had temporarily parted in the beautiful city of Toronto,

and bound for Nova Scotia. Only about a dozen of the members of the Association were able to collect themselves together for this visit to one of the Maritime Provinces, and this small contingent was under convey of Major-General Laurie, a well-known officer of the British Army, and one of the Crimean veterans, who has been settled in Nova Scotia for twenty years or more. General Laurie prefers Canada to England for a home, but this may be owing in some measure to Mrs. Laurie, who is a Canadian by birth, and an estimable lady.

There is a good deal of interesting scenery along the line of the Intercolonial Railway from Quebec to Halifax, a distance of nearly 700 miles. This well-laid railway, one of the best on the continent of America, passes through a country famous for sport, and along the Matapedia Valley, crossing later on the Restigouche and the Miramichi, all of them famous salmon rivers. The lake trout, on which the traveller is regaled at Campbellton, forms a diet forgotten by no one who has tasted it! Geese, and trout, and ducks are found in myriads along the shores, and in the woods are partridges in plenty; while, as for larger game, the caribou and the black bear provide sport of a more exciting kind. And so the line runs on, through the thickly-timbered Province of New Brunswick, by lakes, and rivers and streams, and along the winding valleys, in the midst of a panorama which, ever changing and shifting as it were, presents fresh beauties at every turn.

We saw the picturesque and sheltered Wallace Valley as we passed along, noting the cozy farms, the sheep on the hill sides, and the capital meadows and pastures below. Our first stopping place was at Londonderry, where, at the Acadia Iron Works, the Canada Steel Company employ 500 men. We drove to Great Village, in Londonderry Township, where we saw, on the New Red Sandstone formation, some fine farming land, and also some of the dyked marsh land in an inlet of the Bay of Fundy. The uplands of the locality appear well adapted for stock-raising, and should answer well for both cattle and sheep. The dyke lands make capital meadows, and commonly cut from two to three tons of hay per acre—hay whose quality is said to be very good—without the aid of manure. On the tidal marshes a large quantity of "salt hay," as it is termed, is cut; and these marshes are extremely valuable to the upland farmers. In the Truro district, not far away, there are many fine meadows and pastures, worth £20 an acre, while the dyke lands are worth £30 and upwards. I was assured, on the testimony of a man of experience, that the Nova Scotian farmers can afford to grow beef at ten cents a pound, butcher's meat, and deliver it in Liverpool at fifteen cents, which are 5d. and 7½d. respectively, but that they cannot afford it at less.

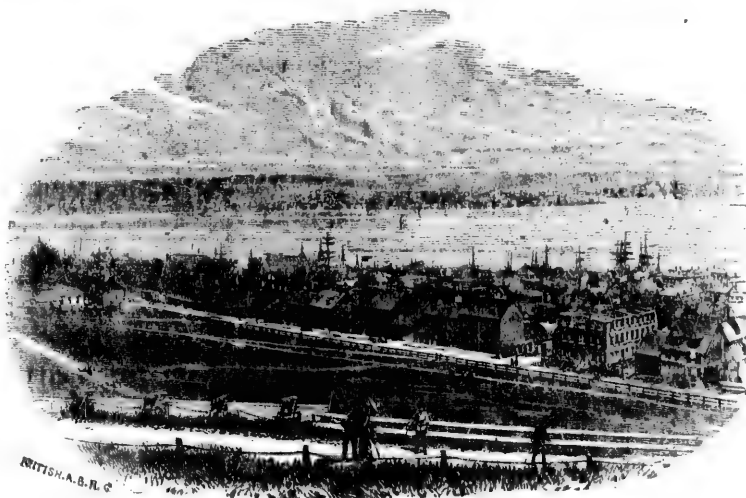
We were most hospitably received and entertained in Halifax by the Lieut.-Governor, and the Mayor and Corporation, and we shall long retain warm feelings of regard for the kindly, and more than kindly, treatment of which we were the recipients. The city of Halifax is handsomely situated on the banks of one of the finest harbours of the world, and affords many beautiful views to the traveller. The handsome gardens are a great ornament to the town, and skillfully kept, and a drive through the public park discloses much of the beautiful scenery for which the place is famous. We drove to the Montague or "Bluenose" gold mines, a few miles from Halifax, and saw the vein from which two brothers took gold to the value of £40,000 in two or three years' time. The mines are being profitably worked among the extensive gold-bearing quartz of this district. The total area assigned to the auriferous strata, and the rocks most intimately connected with them, is estimated at 6,500 to 7,000 square miles, from which it is probable that Nova Scotia will contribute precious metal to the world for ages to come.

From Halifax we went to Windsor and Williamsport, in the midst of the beautiful Grand Pre district, which Longfellow has immortalized in the poem "Evangeline:"

"In the Acadian land, on the shores of the Basin of Minas,
Distant, secluded, still, the little village of Grand Pre
Lay in the fruitful valley. Vast meadows stretched to the eastward,
Giving the village its name, and pasture to flocks without number."

This section of the country, indeed, stretching away to Kentville, and down the vale of Annapolis, possesses, in common with the corresponding shores of New Brunswick, on the other side of the Bay of Fundy, a large area of what is probably the finest grass land on the American continent or in any other country. Much of this land has been dyked out from the sea, on the French *aboucheaux* system, and consists of extraordinarily minute particles of red-coloured alluvial earth, which has been deposited in the course of ages by the great tides of the Bay of Fundy. This earth is many yards deep, entirely free from stones; and it has been, and still is being, enriched from the outcrops of sulphate of lime, whose particles are finely comminuted by the tidal waves, and deposited with the rest of the earthy matter. The dykes keep out the sea-water, which, however, as occasion may require, is let into the land, and escapes again through the *aboucheaux*. When it is thus let in, it deposits a coating of finely granulated mud, which serves as a dressing of the best possible manure, and operates for many years in this capacity, freshening up the land in an extraordinary manner. This system of warping is conducted with marked success in many places around the Bay of Fundy, on

some of the land that was first dyked in by the French; and meanwhile the tides are forming more land outside, which will be dyked in course of time. The older and higher dyke lands, which are now beyond the aid of warping, have been used as meadows for scores of years, cutting two to three tons of rich hay to the acre, and having had no manuring in the time, if ever, save from the excreta of the cattle which eat the aftermath in autumn. These lands, however, having a surface stratum containing a large portion of decaying and inert organic matter of vegetable origin, are found to respond very handsomely to a dressing of lime. In course of time, no doubt, it will be found expedient to manure them systematically, yet the staple of the soil remains of extraordinary richness. Cows milk well on these lands, and on the best of them the aftermath will fatten cattle excellently in a very short time.



CITY OF HALIFAX.

Many farmers have a portion of dyke land, whose function has been to maintain the uplands in condition; and there is abundant evidence that, even in this capacity alone, it is extremely valuable. One magnificent meadow was pointed out to me, and, on inquiring the value of it, I was told that it was sold some years ago at \$400, or £80, an acre! It is more than probable that no purely agricultural land, in any other part of America, would command a price like this, and I am free to express a conviction that the best land in that vast country lies in the Provinces of Nova Scotia and New Brunswick. The best portions of it remind me of the fine stretch of grazing land seen on the way to Yarmouth, in England, and the similarity is enhanced by the many hundreds of cattle which are seen grazing on the rich herbage in both instances. The upland in the neighbourhood of Starr's Point, in the locality under notice, is worth \$40 to \$100, and the dyke land \$150 to \$400 per acre, and these values stamp the district as one of great importance from an agricultural point of view.

But not for farming alone is this country valuable; it is also one of the finest—if not the finest—apple-growing district in the world. The Gravenstein apple is said to be superior in flavour, and in crisp and juicy mellowness, to any apple grown in America, save the apples produced on the tablelands of Tennessee, where, after all, there is greater risk of failure of crop from climatic causes. As a lover of a delicious apple, I may say that, on more than one occasion, I have had my greatest treats in Nova Scotia. A large variety of apples are grown, some of them, like the Gravenstein, being for consumption before Christmas, while others will keep till there are apples again. On one farm I saw a six-acre orchard literally laden to the ground with grand apples. The yield was estimated at 1,000 bushels, and its value \$1,500 or £300. And underneath these trees a crop of 200 bushels of potatoes per acre had been grown in the current year. What land can be more productive than this, and what farming can pay as well! I was informed that nine hundred thousand bushels of apples were shipped from this locality last year, and numerous new orchards are being, and recently have been, planted. Great willow trees, hoary old relics of a bygone régime, that were planted by the French pioneers a century and more ago, adorn the landscape here and there, and timber of other sorts is sufficiently abundant.

Windsor is a particularly handsome piece of country, perhaps the handsomest in Canada, which is saying a great deal. The town is situated in a beautiful valley, which contains a large area of magnificent land, and is also a great fruit growing country. It is bounded by lofty hills well timbered. Nature has done so much for the farmers in these parts, that, according to complaints I heard, they will do but little for themselves. It is obvious, indeed, to any one that they fall far short of their opportunities, as well in stock-farming as in the cultivation of the soil, and I could not resist the conviction that, under farmers from England or Scotland, this beautiful country would soon become more beautiful still. An instance was pointed out to me of a farmer who was induced to try a few loads of lime on one of his meadows; the crop was about doubled and its quality greatly improved, but, notwithstanding this, he has not taken the trouble to use any more lime for fifteen years, though he has the limestone and a limekiln quite handy. Calves are stunted in the rearing and wintering, and farmers do not apprehend either the value of early maturity, or that a young animal raised in this way can never make the animal it otherwise would. A few farmers, however, are leaving the old grooves, and are raising yearlings to weigh ten or twelve hundred pounds, live weight. Let us hope these examples will spread.

The panorama of dyke lands, stretching for miles, and thickly dotted with cattle and horses grazing on the rich aftermath, is a sight that the eye of any Old Country farmer would take in with great delight. The cattle, however, need improving, as a rule, though in places we find some fairly well bred stock, and it would seem as if more sheep should be kept on the uplands, to be fattened on the meadows in autumn. The system of farming is susceptible of great improvement, and I should like to see a closer harmony in quality between the stock and the land. When a dyke meadow fails in quality and productiveness, and such meadow is above the reach of the tide, or is otherwise inaccessible to its influence, it is simply ploughed up, a grain crop or two taken from it, and put down again in fresh "English" grass; then it will go on for another score of years after which the process is repeated. Now it is obvious that this is eighteenth century farming, not nineteenth, and it is not abreast with the progress of the times. A far better plan and cheaper in all ways, would be to lime this land about once in each quarter of a century, and maintain its condition by the consumption of feeding stuffs by the live stock of the farm. Limestone of fine quality is abundant, and easily quarried; and "plaster"—sulphate of lime—almost equally so. One man exports 60,000 tons of plaster annually to the States, and yet the Nova Scotian farmers do not avail themselves of the advantages which lie at their very doors.

General Laurie has done and is doing all the good he can to the agriculture of his adopted province, but the ways of an agricultural reformer are hard and the progress slow. At his residence, Oakfield, near Halifax, he has carved out a beautiful home in the woods. Beautifully situated in a rolling and well-timbered country, with a spacious lake in front and another to the rear, his home and farm possess many charming features. All this has been done, as a matter of course, at considerable cost, and the work of clearing is still going on. The soil grows good crops of various kinds, and a large supply of hay is cut in the marsh lands. Part of the hay is cut on the other side of the lake, and is left there until it can be brought over on the ice in winter; this, indeed is the readiest means of transport, as well as the cheapest, and it admits of a division of labour between summer and winter. The general has for several years experimented rather extensively with ensilage. One of his silos, about 30 feet square and 18 feet deep, is built of strong mortared walls, not plastered inside with cement. It is above ground—it is, in fact, the lower part of a previously existing barn, and has been improvised for the purpose. Twenty-seven acres of clover were put in first, and on top of it a mixed crop of barley, oats and peas, cut into inch lengths by a chaff-cutter, and solidly trodden down. It is covered over with stout tarred paper or roofing felt, and this is covered with planks, that are weighted with old railway sleepers. Five hundred and eleven loads of silage, about 1,000 lbs. per load, and probably 250 Canadian tons of 2,000 lbs. in all, were put into this silo; and when I saw it, which was on the 25th of September, the mass had sunk about four feet. General Laurie thinks well of ensilage as a system, and considers it may enable farmers to dispense with roots, but that it cannot be expected to supersede dry forage as well.

At Shubenacadie I saw a fine rolling country, with splendid bottom lands, in many places well fenced and well cultivated. In some parts of this district there are lands, now lying idle and uncultivated, that were originally granted to settlers who cultivated them for a time and then left them, and who are now either dead or lost sight of. But the contingency still exists that these settlers' heirs may come forward to claim the land, and under this state of uncertainty no one else can take it in hand: while as to buying it, this presents an even greater difficulty, in regard to obtaining a title from all the possible heirs of the original grantee. There is urgent need of a legislative measure which would escheat such lands in the event of the owners remaining away beyond a given time.

Near to Amherst there is a very extensive tract of excellent marsh land. This land is greatly impregnated with saline matter to begin with, but, as is the case with the alkaline soils, in the North-West Territory, the superfluity becomes less, and passes away under a few years ploughing. These Amherst marshes in Nova Scotia, and the adjoining Sackville marshes in New Brunswick, all of which

are situated around the head of the Bay of Fundy, are well worth going a long way to see. They are thickly dotted over with hay ricks, some of which are built on piles; and with hay barns many of which have been built of late years for the better preservation of the marsh hay. No cattle are kept on these lands in the winter, and the hay is all taken to the uplands for consumption. This marsh hay grows very tall, and is very coarse to look at and to handle; it is, however, most nutritious and growing on a saline soil, no doubt very healthful for stock. Mr. Josiah Wood, of Sackville, possibly the wealthiest *bona fide* farmer in America or Canada, fattens a number of cattle in winter, on marsh hay and turnips, neither of which undergoes any preparation in the way of chopping, pulping, or the like, and corn is not found to be necessary as an auxiliary food.

It is commonly said that the farmers have too much land, but the real evil lies in the want of energy which is only too apparent in the bulk of cases. If only they would do well to the land, they certainly have not too much of it. They should either have less land—which ought not to be necessary as a cure for existing evils—or they should employ more capital and labour on that they have. There is no bank so safe as a bank of earth. Then what are the farmers in fear of? Men who are warmly and sincerely interested in the agricultural welfare of the province, complain sorrowfully of the languid energy of the farmers for whom nature has done too much. Cattle-breeding and fattening, and dairy farming in conjunction with them, should be developed and improved. It is said that excellent cheese was erstwhile made in the Annapolis Valley, but that the people, through carelessness or from some other cause, appear to have lost their ancient cunning. In the fattening of stock for the English market, the Nova Scotian farmers have an advantage of \$15 per beast over the farmers of Ontario, on account of lesser distance. This in itself ought to be an incentive to increased energy, but in reality it seems to tell the other way.

To illustrate the crop-growing capacity of this marsh land, I will transcribe some notes given to me by Mr. Black, of Amherst, in reference to three acres of land of his own, and showing the aggregate yield: 1st year, 210 bushels of oats; 2nd year, 750 bushels of potatoes; 3rd year, 1,000 bushels of potatoes; 4th year, 115 bushels of wheat, of 62 lbs. per bushel; 5th year, 12 tons (2,000 lbs. per ton) of hay; and 6th year, 8 tons of hay. This land was dressed at the outset with sixty horse-dungs, say twenty tons, of dung compost per acre. There are thousands of acres of land in the Amherst and Sackville marshes that are capable of such cropping as this, if only they are farmed as they ought to be—land which is among the best of its kind in the world. What then is wanting? An inducement to farm well? Surely there is inducement enough to farm well, if there is inducement to farm at all. Lack of demand for produce? No, this will not hold, for everything there is to spare finds a customer, while the staple articles of beef, which ought to be the leading thing, is in good demand all the time. It has been said that store stock from the ranches of the North-West may be sent to the Tantramar marshes to be fattened; they may, of course, but it seems to me that the Nova Scotians and New Brunswickers ought to be able to raise their own stock, and fatten them too, without touching the cattle of the North-West.

The coal mines and fisheries of Nova Scotia are so very important already, and so susceptible of almost boundless extension, that a short reference to them will be appropriate in this report. The extent of the coal deposits is known to be vast, and the wealth to the Province which will arise out of them in the future will be very great, as, indeed, it already is. It may be said, indeed, that there is a great deal of coal as yet unexplored over and above that which is known about, the quantity of the latter being incalculable save in an approximate manner. In some places, as at the Joggins, the seams crop out to the surface, and the cost of mining the coal is consequently small. The quantity of coal raised from the mines of Nova Scotia in 1882 was 1,365,811 tons, and increased in 1883 to 1,422,553 tons. This coal is exported in part to the United States and to the adjoining Provinces of Canada.

Of gypsum, 144,668 tons were raised in 1883, a large proportion of it being exported to the States, where it is a popular fertilizer.

The fisheries of Nova Scotia are very extensive and immensely valuable. The Province has a very long coast line, which is indented by numerous bays, inlets, estuaries and the like, affording abundant scope for the energies of the fishermen. Some idea of the value of these fisheries and of their expanding character, is seen in the returns, viz., \$7,131,000 in 1882 and \$7,689,000 in 1883. The geographical situation of Nova Scotia is uncommonly favourable to a prolific yield of fish, and this is an advantage of which she cannot be deprived. It is perennial and inexhaustible, and will increase in value coincidently with the increase of population in America.

IN THE PROVINCE OF NEW BRUNSWICK.

Here, on the 27th of September, I found myself alone of the party, the rest having either sailed on that day in the *Sarnation* for England, or gone on down into the States for a run through the cities. Entering the Province at Westmoreland Point, the Intercolonial line runs through Sackville

and Dorchester to Moncton, a thriving town at the Junction for St. John and Prince Edward Island. A favourable stretch of farming country lies on the St. John side of Moncton, and a good deal of it is cleared in places. It is nice featured land—attractive, that is, to the eye—a sort of gravelly loam for the most part, superimposed by a foot or so of good agricultural mould, and apparently well adapted for plough and pasture. The "lay" of the country is in slightly elevated ridges, whose slopes trend gently each way toward the rivers which form, as it were, the furrows between these ridges, at once draining the country and supplying it with water. A vast quantity of this land favourably located in respect of railway communication with the winter ports, Halifax and St. John, is still open to settlers and emigrants. Good roads are easily formed on the gravelly subsoil, once the trees are cleared away. The prevailing trees are spruce, larch, maple, ash, arbor vitae, poplar and willow, with sundry kinds of underwood. The crops are wheat, oats, barley, rye, buckwheat, swedes, carrots, and various other garden roots. It may go without saying that a soil which answers well to clover is calculated to do a farmer good, and here the clover is luxuriant on the cultivated soils, even on the road and railroad sides, or wherever else it has caught a hold.

Sussex Vale is a fine farming country, hilly and picturesque, with good upland soils and very fine intervals. A strong sandy loam throws up a fruitful furrow, and in the rich red soil, the excellent herbage, the capital crops of roots, the herds of cattle and flocks of sheep, and the comfortable farmsteads, we find ample signs of agricultural comfort and prosperity. The cattle are fairly good, but not good enough, and not as good as the sheep. Capital meadow crops are grown, and really excellent ones of swede turnips; while the grain crops, of which even fewer ought to be grown, perhaps, and more green crops instead, are heavy enough in bulk, whatever the quality may be. The interval lands at Sussex, indeed, will grow first-rate crops of almost anything in the way of farm and garden stuff, including green maize for soiling or for silos, and they are excellently adapted to raising the best of cattle. At one farm I saw good specimens of Ayrshires: at another an excellent Polled Aberdeen bull, imported. The Ayrshires are all very well, and will answer excellently for milking purposes, but it does not appear likely to me that the crossing of the native stock of the country with Polled Aberdeen blood will be attended with much success. The farmers should go in for Ayrshires, and keep them pure, or they should follow a similar course with red Polled Norfolks, or Shorthorns, or Herefords, or some other breed; and it appears to me that their own native stock would be greatly improved by the use of good solid shorthorn bulls—not necessarily or even advisedly bulls from fashionable pedigree tribes, but such as may be bought in scores in England, and at very reasonable prices, from rent-paying dairy farmers who breed good stock but don't meddle much with the blue blood of the pedigree herds. Yearling bulls of this class can be bought in numbers at \$50 to \$100, or £10 to £20 apiece, and a cargo of them distributed among the dairy farmers of New Brunswick and Nova Scotia would, as it seems to me, leave a lasting impression, and a good one, on the bovine stock of those provinces.

An old established cheese factory is running still in Sussex Vale, and is producing good cheese, for which the salesmen were holding out for eleven cents a pound. It would be worth while for the farmers to put up a new factory, for the old one is now dilapidated, and is burdened with the sententious of old age. A new creamery has also been put up, containing a Laval's cream separator, and all the best English appliances, in the way of churns and general dairy appliances. Milk is delivered at this creamery at 90 cents per 100 lbs. of milk, which is a little over 4½d. per imperial gallon—a better price than many English farmers, who convert it into cheese, have been making of late years—a better price than some of the English cheese factories were able to pay a few years ago. It is, in fact, equivalent to some 55s. per cwt. for cheese—the English cwt. of 112 lbs. The butter made at this creamery is of a superior character, and is made on sound and enlightened principles. It is, however, much depreciated in my estimation by being heavily salted—salted at the rate of 1 oz. per lb., or over 6 per cent.; and this the public in New Brunswick demand, so that I am forced to the conclusion that the public in New Brunswick have yet to learn the refined joys which properly belong to butter-eating. A little salt, say one per cent., improves the best and freshest of butter, I think, but six per cent. is only fit for firkin butter and for the coarsest qualities. A really good skim-milk cheese is made at the creamery, which will pay if sold at 6 cents a lb.; it is good flavoured cheese, well made, nutritious and palatable, and was ripening down nicely when I saw it on the first of October.

Male and female servants are much wanted. Women earn \$70 to \$90 for the year, all found which is £14 to £18, plus bed and board. Men earn \$15 or \$16 per month, and all found, or \$25 to \$27.50 and find themselves. Such servants, going out from England, soon become farmers themselves. I am also assured, on high authority, that men who understand the art of draining land would find very remunerative employment during the greater part of the year. The chief difficulty with extra farm servants is the finding employment through the winter. Hitherto lumbering in the woods has been the chief-winter employment for these superannuated, and probably will be for some time to come, though lumbering must eventually decline in volume. Extended stock-raising would provide more employment in winter, and so would help to solve a problem which is felt to drag in

Edward Island, good deal of it of gravelly loam apparently well ridges, whose between these of this land and St. John, is about, once the ite, poplar and wheat, swedes, answers well to vated soils, and

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these provinces, and not in them only but in a great part of North America; not in Canada only, but in many of the northern States of the Union.

The Provincial Stock Farm of New Brunswick is located in King's County, not many miles from Antigonish. There are various breeds of cattle, including Shorthorns, Devons, Polled Norfolks, Ayrshires, and Polled Aberdeens, kept at this farm. The Ayrshires seem to be doing better than the others, and this is not to be surprised at, for the land is not good enough to maintain high class cattle of the heavier breeds. The Stock Farm would have been much more suitably located at Sussex, where it was originally intended to be located, or else in the noble valley of the St. John River, on one of the excellent intervale farms. One of the leading elements of success in agriculture is to secure, as it were, harmony between the cattle and the land; that is, first-class land should have heavy breeds of cattle on it, and the inferior land should have the breeds whose origin and antecedents are such as will enable them to live upon it. The Ayrshires, for instance, will thrive where Shorthorns would starve, so far as land is concerned; and they will resist a climate that will surely kill off the Jerseys. Such breeds as the Ayrshires, the Kerrys, and the Angleseys, then, are the best for inferior land, but at the same time they deserve good land, and will respond to generous feeding. It is intended to locate the Stock Farm elsewhere, and I consider this ought to be done without delay.

The city of St. John is situated in a district famous for varied and beautiful scenery. For fifty miles and more up the river St. John the riparian picturesqueness surpasses anything of the kind I have seen in America. The city has a very fine location—on hills which overlook a fine harbor, and which, away back, are well covered with trees. Rocky the country is in places, but elsewhere it consists of fertile land, well adapted to agriculture. It is one of the most picturesque localities in Canada, and offers many attractions to visitors and settlers too. Ridges of sandy or gravelly soil, and valleys of stiff clay or strong loam, run away from the city, inland; and these have been and are being carved out into small farms attached to villa residences. On several of these farms I have repeatedly seen excellent crops of roots and grain—first in 1880, then in 1883, and again in 1884.

My excellent friends, Thompson and Manchester, both merchants in the city, and Englishmen by birth though Canadians by adoption, reside on the Manawagonies Road, in Lancaster Township, some four miles from the city. They have beautiful houses and capital buildings, with model farms attached. Mr. Thompson may be called the Mechi of Canada, for he has demonstrated what can be done with the heavy clay land in the valleys, so much of which is still lying idle, save for the timber there is upon it—the primeval forest. He took in hand eight acres of this land, which for the most part was very wet and boggy, cleared it of timber and brushwood, drained and subsoiled it, and made it into land of first-rate quality. The process was of course expensive, but it paid seven per cent. per annum, leaving a sinking fund which repaid in nine years the capital that had been invested in clearing, draining, subsoiling, cultivating and manuring. The main drains were of four-inch pipes, laid four feet deep; the minor drains were of two-inch pipes, twenty-four feet apart, and three feet six inches deep. The land was ploughed several times over, to a depth of six inches, and subsoiled to fourteen. Twenty loads per acre of farm-yard manure were ploughed in, and one hundred bushels of lime per acre were spread on the surface. With the lime were harrowed in $3\frac{1}{2}$ bushels of oats, 1 peck of timothy, and 4 lbs. of clover, per acre. Of oats, 70 bushels per acre, weighing 39½ lbs. per bushel, were reaped, and forty-two cents of straw per acre were sold. The following year three Canadian tons per acre of hay were sold off this field, whose exact area is 8a. 1r. 14p. 17 yds., and two loads of rakings were not weighed in. The field was a meadow eight years, and appeared to cut as much in the eighth as in the first year, though it had no top-dressing. Mr. Thompson considers such land as this to be better adapted for oats and grass than for roots and green crops, and thinks it is best of all in permanent meadow. This field is situated in a deep valley, and is surrounded on three sides by primeval forest, which in time will also be removed.

Mr. Manchester's land is a strong, gravelly or sandy loam, and I have seen excellent crops of swedes, parsnips, carrots and oats growing upon it. These two gentlemen are demonstrating, in the intervals apart from their businesses in town, and in a most worthy and commendable manner, the capabilities of the soil in this part of New Brunswick. It is evident, of course, that the command of ample capital for the purpose is expedient in New Brunswick as in any other country for intensive farming of this sort, not much of which, we may take it for granted, will be done by the rank and file of farmers, so long as paying crops can be grown without it. The examples set are nevertheless of great value, and in course of time will be followed more or less. The gentlemen I have named are, indeed, merely ahead of their time, and may be regarded as the pioneers of scientific agriculture in the Province of New Brunswick.

I call the following from my report of 1880:

"Apart from its wealth in timber and minerals, the latter as yet only just beginning to be developed, the Province of New Brunswick is well adapted to the pursuits of agriculture. In several portions of the province there are soils which have certain very remarkable features and properties; and in many other portions I found soils that are easy to cultivate when once cleared of timber, deep

in staple, and rich in the accumulated fertility of many centuries. Many of the upland soils bordering on the beautiful valley of the St. John River have every indication of being well adapted to stock raising, particularly of bovine stock. They are for the most part sandy or gravelly loams, sometimes approaching to stiffness, but generally friable, varying, no doubt, in depth and quality, but hardly anywhere good for nothing. It is probable, in fact, that with the exception of Prince Edward Island, New Brunswick has a larger proportion of cultivatable soils than any of the other provinces of the Dominion. So far, however, the settled parts of the province are chiefly along, or adjacent to, the rivers which drain the country; but there are yet many millions of acres not appropriated, as good, in all probability, for agricultural purposes as those that are—if we make exception of the 'dyke' and 'intervale' lands. But these unsettled portions are for the most part still covered with a dense growth of timber, and I should hardly fancy that English farmers are either fitted for or would like the task of clearing it off. The work of clearing these lands is indeed herculean, but it is generally supposed that the timber will pay for it. The land may be cleared at a cost of \$12 to \$20 an acre, and it is said that a Canadian backwoodsman will cut down an acre of heavy timber in three or four days. Let us take the new settlement of New Denmark as an instance of what may be done. Seven years ago the locality was covered with a dense forest, and the Danes who emigrated to it were very poor; now hundreds of acres are cleared, and are producing abundant crops of grain and vegetables, some of which are of a superior character, and the land supports a happy and prosperous colony, which in time will be a wealthy one. It is not too much to say that the condition of these people is far better than it would have been in the land of their birth. Take again the Scotch settlement of Napan, on the Miramichi; here we have also a favourable illustration of what thrift and industry will do. The settlement is mainly Scotch, but there are a few Irish among them, some of whom have prospered. One Irish farmer we met had become wealthy, 'and,' said a countryman of his to me, 'we call him Barney Rothschild itself.' It is at once pleasant and instructive to see these flourishing new settlements, for they are only what will be found all over the province in course of time.

"It would seem probable that a number of English farm labourers might do the same, starting with free grants of land covered with timber, and clearing it as far as circumstances would admit of. They would in any case meet with encouragement from the Government and people of the province, and with industry their reward would be sure.

"The soils I have spoken of as possessing certain remarkable features and properties are the 'dyke' and the 'intervale' lands. Both Nova Scotia and New Brunswick are celebrated for the former, while the latter are a peculiarity of New Brunswick in the valley of the noble River St. John. The dyke lands of both provinces are found bordering on the inlets of the Bay of Fundy. The extent of these dyke lands is said to be about 65,000 acres, and there is still a large area to be reclaimed. A large portion of the marshes was dyked by the French previous to the conquest of Fort Beausejour in 1755. Immediately afterwards they were taken possession of by the English settlers, who afterwards obtained grants of them from the Crown. The expense of dyking fresh marshes has ranged from \$8 to \$20 per acre, and it is worthy of note that the system of constructing dykes and *abordaues* adopted by the first French settlers is the one still employed.

"The 'intervale lands' of New Brunswick are, as the name suggests, found in the valleys. The name is peculiarly appropriate and expressive. In England we should call them bottom-lands, or alluvial soils. They are, in fact, alluvial soils to all intents and purposes, with this peculiarity—they are still in process of formation. In some cases these intervale lands consist of islands in the rivers—and there are many such in the magnificent River St. John; but for the most part they are level banks on each side of the river, in some cases several miles wide, and reaching to the feet of the hills, which form the natural ramparts of the valleys they enclose. These intervale lands are rich in quality, and the grass they produce is very good. Like the dyke lands they need no manuring artificially. The dyke lands, in fact, have such a deep excellent deposit of unusual richness, that manuring is superfluous; but the intervale lands receive a periodical manuring in the deposit which is laid on them each spring by the freshets of the rivers. They are, in fact, flooded more or less for several weeks in the spring of the year, and the deposit left by the receding waters is of a character to add fertility to an already rich soil, and at the same time, to add to its depth. An inch or two of rich alluvial mud deposited on these lands, each year, is gradually raising them above the influence of the freshets; and they are to-day among the most valuable soils in the province.

"There are in this province millions of acres still unoccupied, except by a heavy growth of trees, which form the primeval forest. The forests require a large expenditure of labour to clear them, and English farmers are not well calculated to do the work; but there are numbers of cleared farms which can be bought, with good houses and buildings upon them, at the rate of £6 to £8 an acre, and it seems to me that a practical farmer from the Old Country, especially if he has a rising family to help him, could hardly fail to do well in this province. So far as the people are concerned, an English farmer would find himself quite at home here, and there is nothing in the soil or climate which would cause a painful disillusion. The geographical position of these Maritime Provinces gives them

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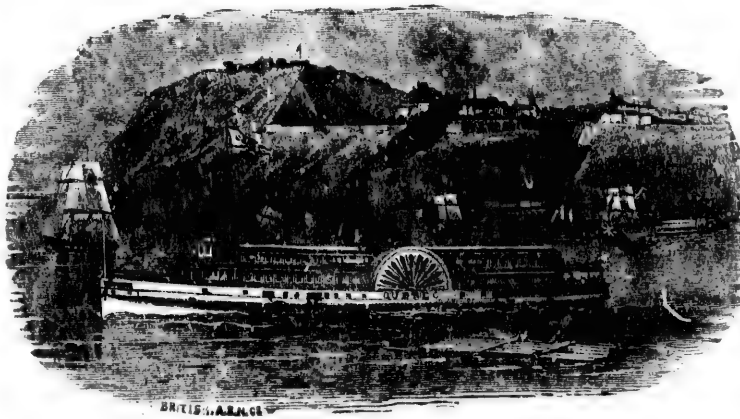
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a strong claim on the notice of the Old Country farmers who see the need of fresh fields and pastures new : comparative nearness to Britain, with regular and uninterrupted communication all the year round, offers a strong inducement for English settlers to come here ; and the new trade in cattle and sheep which is rapidly growing up between the new and the old countries, is sure to make farming in these provinces a profitable business to those who have the will and the judgment to lay themselves out to produce live stock of the quality which will find favour in England."

The Valley of the St. John, which is one of the richest of the great watersheds of Canada, contains a great area of very fine stock-raising land, and excellent farming countries are found away from the valley—on either side of it. Land in a state of nature can be obtained for next to nothing, and cultivated farms, having houses and buildings upon them, and being fenced in all round, can be purchased at one or two years' rent of farms in England. The River St. John forms a great highway for the transport of the produce of the land, a good deal of which finds its way into the State of Maine, whose borders adjoin New Brunswick for a considerable distance on the west. Railways exist already through several sections of the country, and the new extension of the Canadian Pacific line, which is under construction, will expedite the development of the Province and the removal of what it has to sell. The prosperity of the city of St. John will receive, as the winter port and the eastern terminus of the line, an impetus which will go on gathering strength, and it will be strange indeed if these Maritime Provinces do not greatly increase in population and in wealth.



THE CITADEL, QUEBEC, AND A RIVER STEAMER.

The landlords and farmers of England, and many writers and speakers on agricultural matters, profess to find some consolation in this : that with an increase of trade and commerce, freights will rise, and a check will thus be placed on transatlantic importations of stock. I have no doubt this hope will prove to be a mere *ignis fatuus*, and I cannot participate in it. I have it on very high authority that there is no probability of freights rising, but the contrary, rather. With steel-built ships, compound condensing engines, and various mechanical improvements, to which at present no limit can be placed, the cost of sailing a ship across the Atlantic is being yearly lessened. The expenditure of coal on board steamships is being rapidly reduced, and the size of the ships increased, so that a 5,000-ton vessel can be navigated now at very little more cost than was entailed by a 2,000-ton ship ten years ago. Freight at 25s. a ton in 1880 pays better than freight at 50s. a ton did in 1870. This is brought about by enlarged ships, a smaller expenditure of coal, and a larger space on board for freight. The ships now building, though larger than those running, will run at less cost and carry very much more freight, and although freights for some time past have been and still are very low, it is an open secret that freights pay far better than passengers. In any case, the rate at which ships are being, and will be, built is greater than any probable increase in the volume of freights. Hence it is hardly possible that English farmers may find any solid comfort in a hoped-for rise in freightage.

I come now to the last point of discussion and inquiry in this report, viz : Is Canada a suitable field of settlement for English farmers ? I approach this point with caution, because I am aware of its great importance. But the question rather is : Are English farmers suitable for Canada ? It ap-

pears to me that Canada, as a country, has many advantages, and a future in all probability very important. She is a rising country: this cannot be denied; and she cannot remain in her present stage of development. I think, then, that many of our middle-aged English farmers are unfitted by their habits of life and of labour to battle with the work which would fall to their lot in Canada. But there are many others who are fitted for it, particularly those who have led laborious and active lives; and our young farmers would soon fall into Canadian habits. Men with large families who are not afraid to work would, as a rule, do well in Canada. The younger men would not long be at a loss in pioneer life in the North-West, but it is scarcely the place for a man who has been long accustomed to English methods of farming; that is, they would have to unlearn their old methods and learn new ones, but it is only fair to add that the land and summer climate of the North-West are so generous that very careful cultivation is at present alike unnecessary and scarcely profitable. These latter men, as it seems to me, would be happier, and their wives would be more content, in Ontario, Nova Scotia, New Brunswick, or Prince Edward Island. They are not suited to the cruder life of the far West.

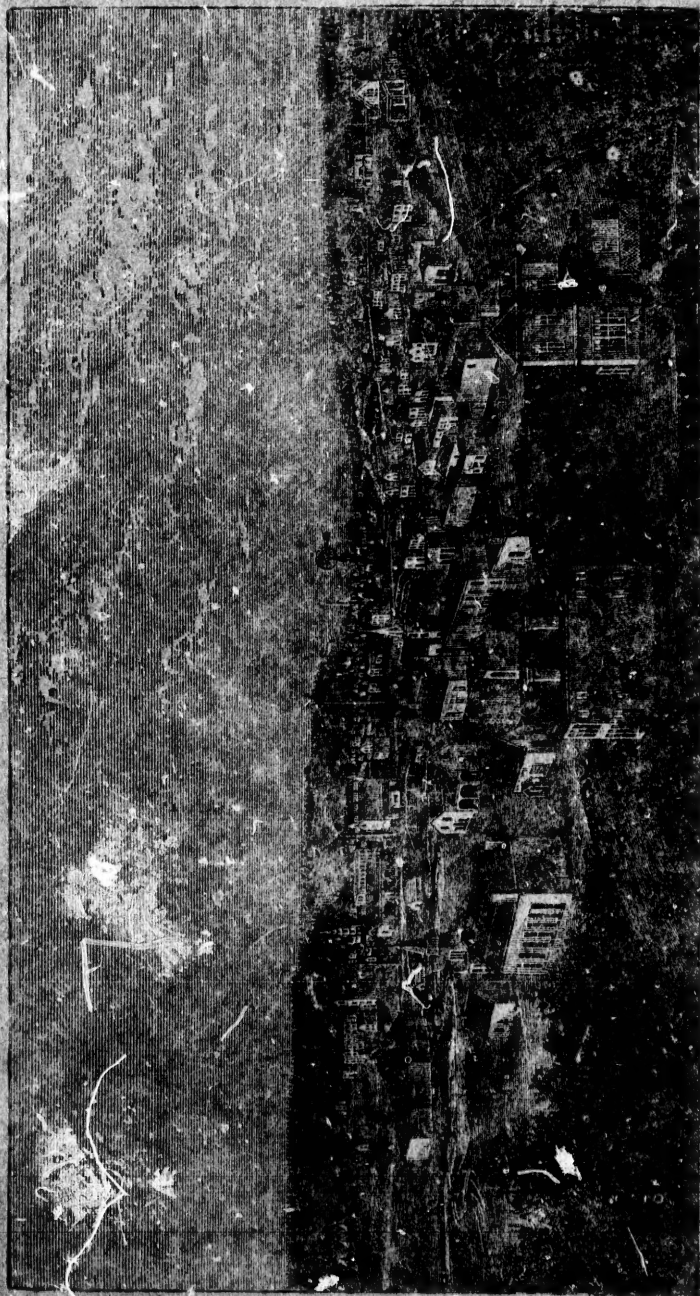
People who go out to Canada must make up their minds to work and be steady. It is no *El Dorado* for idlers and drunkards. They must expect to rough it more or less for a time, until they have made money enough to put everything in order; and they must expect severe winters, which, however, are less trying than the winters of England and Scotland. There is money to be made by farming in Canada, if a man goes the right way to work and chooses a proper locality, and thousands of Englishmen, who have struggled for years in the Old Country without making much headway, would find a better chance in Canada.

On the 4th of October I found myself again on board the *Parisian*, bound for Liverpool, after having had a tour which can only be described as magnificent! Many of our old passengers were on board, and not a few others whose acquaintance we had made in Canada. There was a general consensus of opinion that the meeting of the Association, and the subsequent tripping we had done, had been a conspicuous success. One day, under the chairmanship of Lord George Hamilton, we had a very interesting discussion in the saloon, on the topic, "Does Canada offer a good field for emigrants?" The general opinion was decidedly in favour of the affirmative, scarcely a dissentient voice being raised to the contrary. Mr. Leach stated that of the emigrants on board who were returning to England, on the plea that they could not sell the food they raised, many were men who will do well nowhere. Dr. Edmunds stated that he had not discovered one person who deserved to get on and who had failed to do so in Canada. "Young dandies, idlers and skulkers," he said, "are no good in Canada; and it is a mistake to send out such young men and feed them with remittances; better make them know that they must work. Good men will do well in Canada, as they will anywhere." Mr. May said that we had a surplus population in England, and that there was room for it in Canada. "Men could do better in Canada than in England, under certain conditions."

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